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CHEMICAL PROCESSING

The News Magazine of Processing Developments and Control

Highlights

of This Issue

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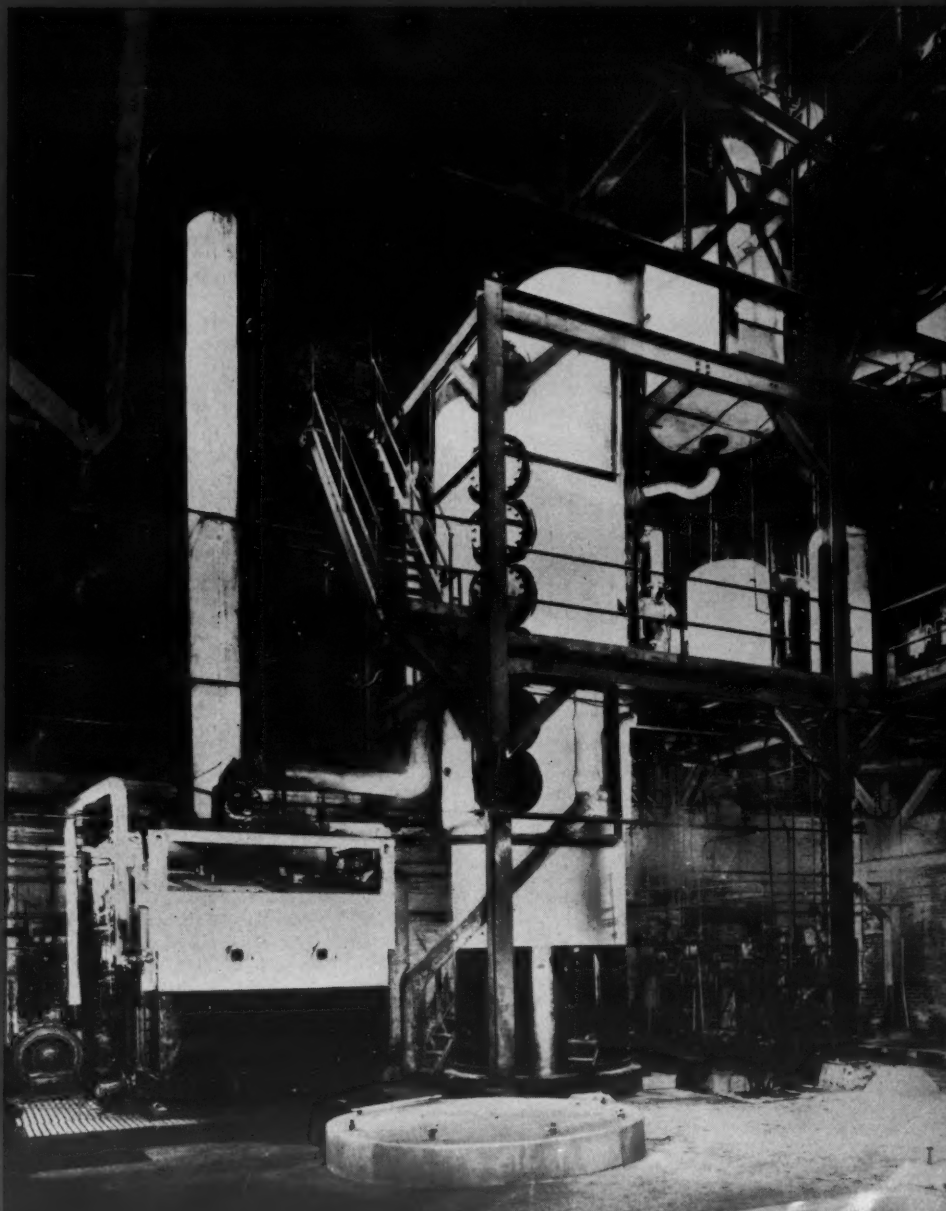
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The Cover Picture

High-quality fatty acids flow from this still which has Dowtherm-heated bubble-cap trays. Resulting economies are revealed in article onPage 9

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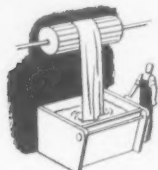
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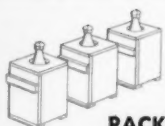
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"That's Interesting"

Guillotine tires, blow rubber gloves up to many times normal size, at exhibit

A 60 ft high guillotine on which visitors can try to "execute" a puncture-sealing tubeless tire will be one of the features of a rubber exhibit to be opened next spring by B. F. Goodrich Co. at the Museum of Science and Industry in Chicago. A 58 ft long moving sidewalk of rubber will provide transportation for visitors through a tire-shaped gateway to various exhibits showing rubber at work in the transportation field. The elasticity and toughness of surgeon's gloves will be demonstrated by a test which stretches a pair from a normal hand size to 5 feet in length. Another inflates them up to 30" in diameter.

Pressure-creosoted piling

Koppers News, internal house publication of Koppers Company, Inc., reports how use of pressure-creosoted piling at the Williams plant of the company, now under construction at Port Arthur, Texas, will effect great savings.

It is customary, in this area, to install untreated pilings in preparing foundations for large oil storage tanks. Using untreated piles for the tanks, a concrete pad 3' 6" thick would be necessary. However, with creosote treated piling, the pad need be only 1' 3" thick. On 500,000 gal tanks it is estimated that there will be savings of \$3952, and \$13,752 on 1,500,000 gal tanks through use of the company's Wood Preserving Division's pressure-treated piles. (Koppers Company, Inc., Pittsburgh, Pennsylvania.)

Radiocobalt

Radiocobalt promises to be the workhorse among the radioisotopes for medical purposes. It is readily made in the reactors; has radiation characteristics resembling radium but without some of its disadvantages and high cost; has gamma radiation equivalent to a 2-million volt X-ray machine but it is easier to use. It can be applied in needles or in other application in deep therapy. U. S. Atomic Energy Commission.

Film teaches use of balance

A 13-minute 16 mm sound-film, "The Analytical Balance and Its Use," presents detailed instructions with exceptional interest and effectiveness. Originally produced for use at the University of Illinois with the cooperation of Fisher Scientific Co., Pittsburgh, Pa., the film is now available to industry. Topics discussed in the film include the construction of the balance; theory of balance swing and practical determination of its rest points; weighing; and special types of balances. Close-ups and vivid diagrams supplement the running commentary. Film was directed by Dr. Ralph A. Johnson, Department of Analytical Chemistry and Lewis V. Peterson, Visual Communication Specialist. Inquiries concerning purchase and rental of film should be directed to L. V. Peterson, 119 Gregory Hall, University of Illinois, Urbana, Ill.

Friction of moving grain tough on conveyor tubes

Tubing bends in brewery conveyor systems (through which malt and grains are pumped) are now being porcelain enameled on the inside surfaces to facilitate speedy movement of conveyed material and to increase service life. Friction of grain movement builds up at turns, wearing through ordinary steel rapidly. Porcelain enamel wears many times longer, according to Porcelain Enamel Institute, Washington 5, D. C.

Making gravel from mud

Process to change mud, sand and clay into useful gravel has been developed by scientists at Cornell University. Although not cheap, it is sufficiently economical to justify its use for road building where gravel is scarce. Ingredients are soil, inexpensive chemicals and sulfite liquor. Thus, use is found for this waste of the paper making industry that has been going into streams at the rate of millions of tons per year. The "synthetic" gravel has withstood freezing, thawing and other tests. Mud and chemical mixtures are fused in briquetting machines. About a ton of chemical is used to make a truckload of gravel.

"That's Interesting"

Metal-cutting lubricator

A radical departure from the conventional method of lubricating metal-cutting tools is found in a device that directs a jet of oil directly on the bit's cutting edge from below, where the shaving is not in the way. Streams of oil pass through the space between the work and the side relief face of the tool.

The Hi-Jet system was invented by R. J. S. Pigott, director of engineering research of the Gulf Research & Development Co. It is manufactured by Thompson Products, Inc., Cleveland, Ohio. It uses a new special oil, that has been named Gulf Hi-Jet.

Plastic skate wheels

Roller skate wheels that are longer wearing and produce only a quiet hum instead of the familiar clatter are being made of Enrup, a thermosetting plastic. The new material is a joint development of United States Rubber Company and Fo-Mac Enterprises, Tulsa, Okla. Wheels made with it have a tighter, firmer grip.

Ground water and the law

A discussion of water law, with special attention to ground water law viewed from the standpoint of the hydrologist, has been prepared by C. L. McGuinness of the Geological Survey, Department of the Interior, at the request of the President's Water Resources Policy Commission. A limited number of copies are available. Applications should be directed to the Geological Survey, Washington, D. C.

Substitute saves money

Substitute materials not only save vital metals but render adequate service at surprisingly low cost. An example is a plastic flange cover which is used on acid pipe line at saving of 40% of price of lead flange.

Signal Corps battery tester

The Army Signal Corps Engineering Laboratories at Fort Monmouth, N. J. has developed a tester that quickly and accurately determines battery vitality. It tells when the battery begins to get sick and whether it will "konk" out on a driver of a car or truck or on vital communication equipment it may be serving.

Certain Signal Corps batteries don't have more than a teaspoonful of acid in their cells. There isn't enough acid in these batteries to be tested. The new tester makes it unnecessary to unscrew battery cell caps and gives an electric rather than a chemical test. Two prods are pressed against battery terminals and desired information is automatically relayed to the indicator.

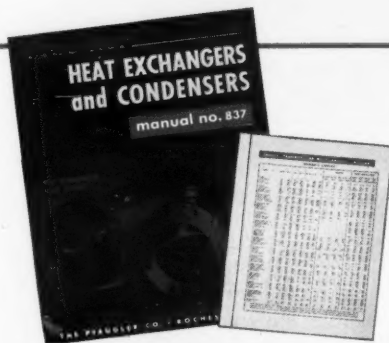
Basic principles of design were worked out in Signal Corps laboratories. Development model built by Hickok Electrical Instrument Co., Cleveland, Ohio.

For more information on product at right, specify CP 8984
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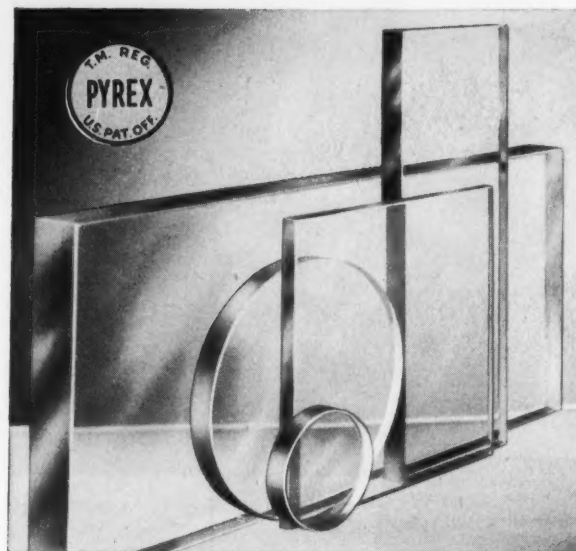
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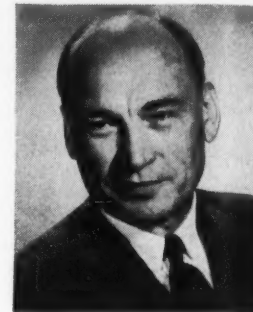
Obtainable sizes are limited only by the maximum sheet size, 24" by 60". The table at left lists available thicknesses.

A Look At Tomorrow's Laboratory

This editorial has been written at the request of the editors of CHEMICAL PROCESSING . . . and is authored by

DR. A. O. BECKMAN

Dr. Beckman graduated from the U. of Illinois in 1922 and received his master's degree there in 1923. After continuing his studies at California Institute of Technology for one year, he took a position with Bell Telephone Laboratories in New York.



Returning to California, he earned a doctor's degree from Cal Tech in 1928 and stayed there as professor of chemistry until 1940.

Dr. Beckman is president and founder of three instrument companies: Beckman Instruments, Inc.; Helipot Corp.; and Arnold O. Beckman, Inc. He is president of Instrument Soc. of Amer., and a member of ACS, Electrochem. Soc., AAAS, and several others.

THERE are prophecies and prophecies. A look at the laboratory of the year 2000, and its equipment, might very well disclose all sorts of techniques and devices of which we have no inkling now. But in discussing "Tomorrow's Laboratory" it is well to keep the foreseeable future in mind. These are the trends which we can expect to see dominating instrument use and design within the next several years.

In comparing the use of instruments today with their use thirty years ago, one of these trends is very apparent. In the 1920's, there was a sharp line which divided the "lab instrument" from the "plant instrument." That dividing line has been disappearing.

Ten years ago infrared and mass spectrometers were complicated instruments only to be found in the largest laboratories — today they are becoming commonplace industrial instruments. The speed with which these two have come out of the lab and into almost every petroleum refinery is surprising. It may be said that the laboratory instrument of today is the industrial instrument of tomorrow. But, instrument ideas are not only flowing from the lab into the plant, there is an increasing laboratory use of instruments formerly thought to be strictly industrially important. Laboratory directors are becoming increasingly aware of the fact that it is usually better, and cheaper, to buy a recording thermometer than to hire a Ph. D. to watch the mercury rise and fall in a glass thermometer.

There is a very evident trend to design industrial recorders as smaller instruments. In connection with increasing laboratory use of the instruments, this is all to the good. Instrument designers should and will build instruments that are equally useful in the plant and in the lab.

Just as there has been a movement toward the continuous process to replace the batch process, there has been a change to continuous monitoring to replace grab-samples and laboratory control. Many industries use continuous monitoring of their process variables now; many more will when convenient equipment is available. Convenience, of course, is a major reason for industrial recorders. Another reason for using continuous recording is the fact that fluctuations of short duration show up on the record. These fluctuations might never be apparent with intermittent sampling.

Continuous monitoring is now applied to cellophane

(Continued on page 199)

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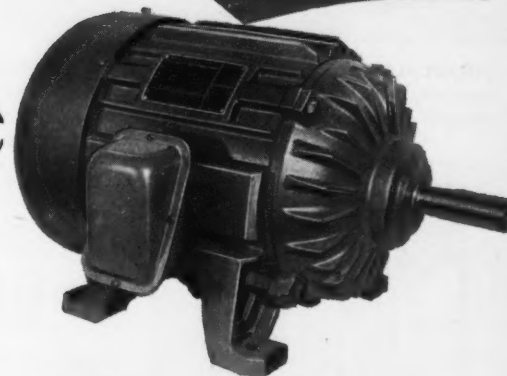


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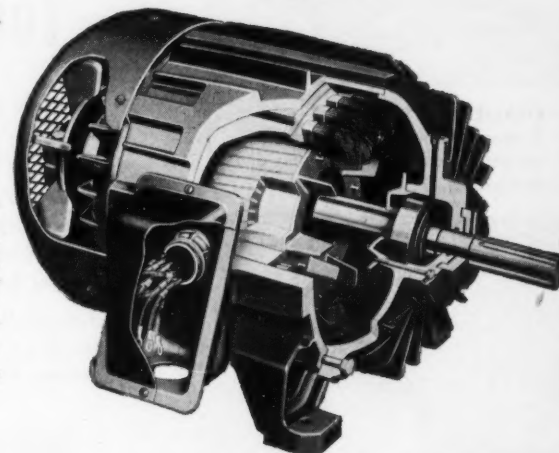
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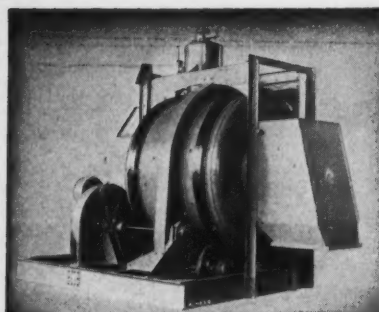


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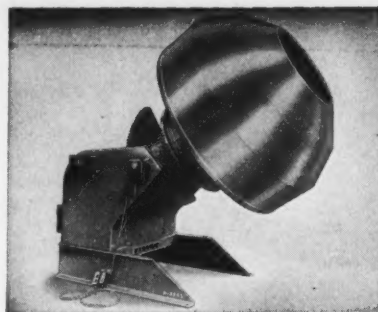
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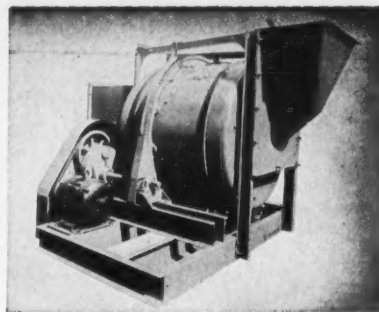
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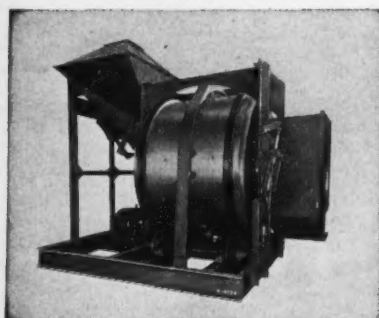
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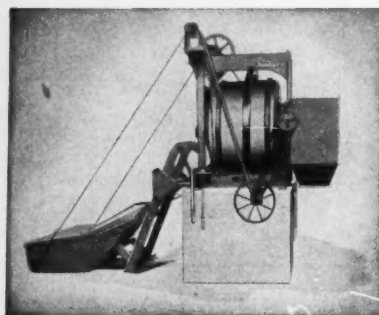
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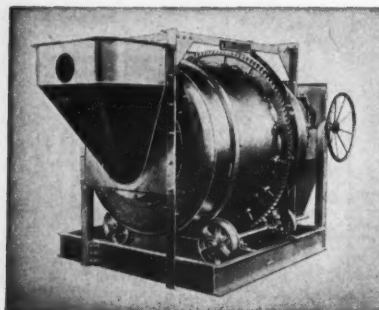
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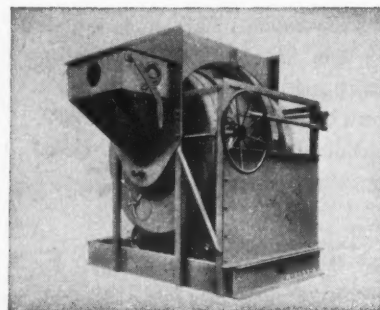
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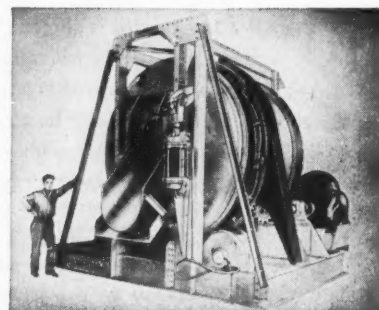
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AMERICAN Cyanamid COMPANY

INDUSTRIAL CHEMICALS DIVISION, DEPT. CP-2
30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

In Canada: North American Cyanamid Limited, Toronto and Montreal

When inquiring check CP 8938 on handy form, pgs. 2-3

Continuous Drying in Stainless Rotary Unit Planned for Contract Organic Chemicals

Easily cleaned dryer will replace cabinet types, but will retain flexibility in handling wide variety of products

Present method of cabinet-drying chemicals at Edwal Laboratories involves a lot of labor for loading, moving, and unloading truck-trays. Other reasons management looks forward to continuous drying are: 1) faster drying without case hardening, 2) less dusting, 3) elimination of grinding step (for most products) after drying

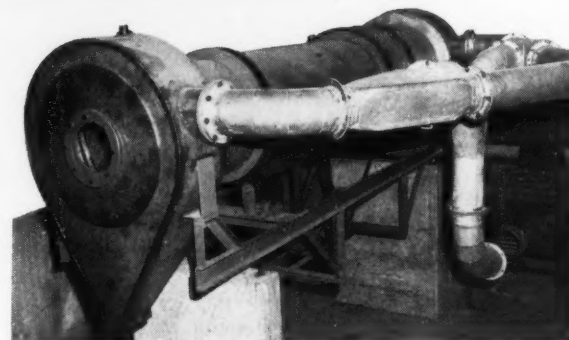
THE Edwal Laboratories, in Ringwood, Ill., now in their twentieth year, have established a place in the chemical industries as manufacturers of high-purity organic chemicals and photographic chemicals. Although they produce many products under their own name, a good share of their business lies in contract pilot plant or commercial production for other companies. Principal products are presented in the following table (of course, Edwal has made many more during their 20-year life):

| | |
|----------------------|-----------------------------|
| Allyl amine | o-Chloromercuriphenol |
| Allyl mercaptan | o-Phenylenediamine |
| Diallyl amine | Phloroglucinol |
| Ammonium thiosulfate | Semicarbazide hydrochloride |
| Benzotriazole | Sodium cyanate |

As with any contract manufacturer, Edwal has to maintain a high degree of flexibility in processing set-ups because of the wide variety of processes they must use.

Processes are done batchwise in most cases. Many pieces of glass-lined equipment, or special protective coatings, are employed because of the corrosive conditions present in many processes. It is interesting to note here that, where stainless steel is used, it is always Type 316 because of its universal corrosion resistance; other types are not even stocked. While it is true that other stainless steels have a higher specific resistance to certain corrosives, Edwal considers it more necessary to use Type 316's universal resistance in their type of operation.

At present, production drying is conducted in wooden, forced-circulation cabinet type dryers, but a continuous rotary dryer is being installed. When the new dryer swings into operation, Edwal hopes to avoid the difficulties connected with the older type of dryer. For in-



Dryer's outlet end is shown here. Ductwork is arranged so that hot air can flow concurrent or counter-current to material flow, change from one to another being made by adjusting dampers

stance, case hardening will take place when drying some of their products at elevated temperatures in the trays, so these must be dried at atmospheric temperature. Naturally, this adds quite a few hours to processing time. It is hoped that these products can be dried at elevated temperatures, without case hardening, in the rotary dryer because they won't have to be in the dryer as long.

Obviously, the switch to continuous drying will reduce labor requirements for the drying operation. Those acquainted with cabinet dryers will know how much time is needed to load the individual truck trays, roll them into the dryer, keep checking drying progress, and then roll them out and unload the trays. This type of

Inlet end of stainless steel dryer in its present stage of installation. Hopper will set atop screw feeder, and will be filled through floor from upper level. Note that both feeder and dryer are equipped with variable-speed drives for flexibility in controlling conditions. In foreground is air heater, showing connections (now capped) to which steam lines will be attached

operation can also lead to product contamination, and dusting, with all the handling.

After tray-drying, most products are put through a Fitzpatrick comminuting machine before packaging. Products from the rotary dryer probably will be of uniform particle size, and Edwal hopes that most of them will not have to be ground.

The rotary dryer was designed by Edwal and, except for some forming operations, was built by them. It is made of Type 316 stainless steel, is 10'7" long, has a 2' ID, and will have a nominal capacity of two tons/24-hr day.

Separate variable-speed drives are used on the dryer and its screw feeder for flexibility of control. Pitch of the dryer can be varied by elevating screws at its feed end.

Drying will be accomplished by direct contact with a flow of hot air, either concurrent or countercurrent to material flow, depending on setting of dampers in the ductwork. Air is heated by passage over steam coils of an American Blower heater. Temperature can be as high as 150°C, and air flow as high as 1900 cfm.

Moist material will be fed to the dryer by screw feeder on the bottom of a hopper. The open top of the hopper will be directly under an opening in the floor above. This floor will store material to be dried. It has a large sliding door through which pallet loads of materials can be deposited by a fork truck operating on the ground outside the dryer building.

A stainless steel cyclone collector is being installed at dryer exit to catch the fine material, although it is believed that there won't be much of it. The regular dried product will drop into a hopper which can be removed through a rear door on the first floor. A monorail hoist will be put in to lift the hopper when it is desired to remove it through a door on the second floor that leads to a ramp between the dryer building and an adjacent production building.

Most products that will be handled in the dryer are quite soluble in water, so cleaning between runs will not be too much of a problem. However, the flights inside the unit are detachable and can be removed when necessary to do a stringent cleaning job.

First materials to be dried in the new dryer will probably be ammonium thiosulfate crystals, phloroglucinol and

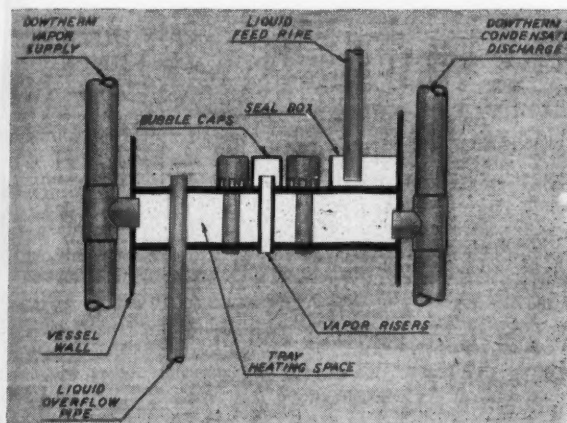
formaldehyde bisulfite, but others will follow soon after. Moisture in feed materials will range from 10 to 15% in dried products from 1 to 6%.

If desired, the dryer can be adapted for operation with some type of controlled atmosphere instead of air.

(Facts for this story were developed during a plant tour with Mr. Ira Fuller, Chief Engineer, The Edwal Laboratories, Inc., Dept. CP, Ringwood, Ill.)

Quality of Continuously Distilled Fatty Acids Exceeds that of Batch-still Products

Still with Dowtherm-heated bubble-cap trays saves steam, floor space; assures cleaner operation



Dowtherm-heated bubble-cap tray is "heart" of continuous fatty-acid still

PROBLEM: Among other things, A. Gross & Co., Newark, N. J., produces distilled fatty acids from crude stocks of both animal and vegetable origin.

The distillation was done in batch stills operating at about 2" Hg absolute, direct-fire heated, and using large quantities of injection steam for stripping. Two distillations were required to produce double-distilled fatty acids of acceptable quality.

At least four such stills were required to meet production needs, employing two operators per shift to run them. Floor space required was high and product quality variable, being good at the start of a batch and unacceptable near the end. Appreciable recycling was found necessary.

Solution: A switch to continuous stripping was made. The stripping column is unique in that the bubble-cap trays are made up of two plates each, between which Dowtherm is circulated for heating. The liquid overflow pipes and vapor risers pass through both plates, of course.

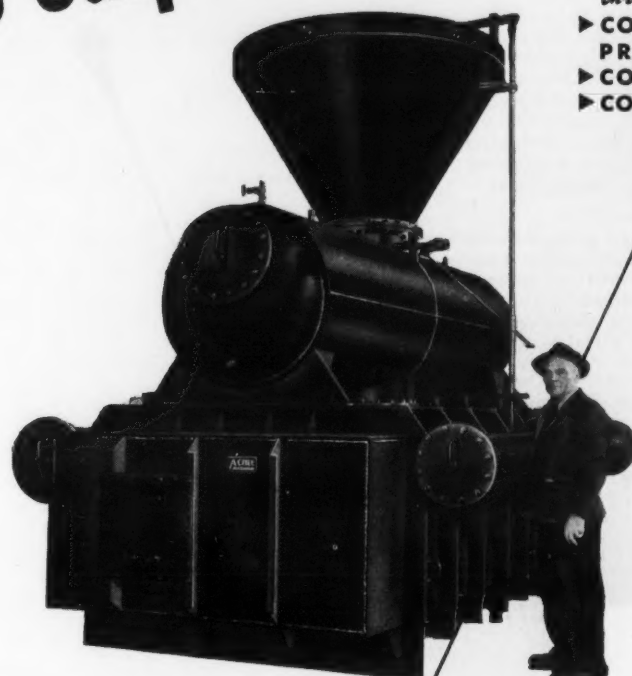
This method eliminates the necessity of heating the

(Continued on page 13)

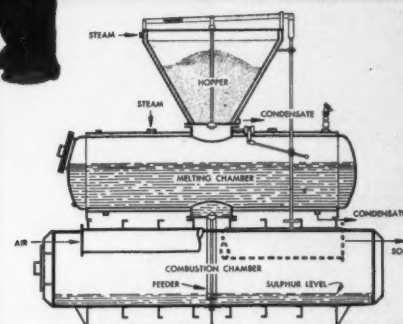
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- thru
- ▶ CONTROLLED, UNIFORM PRODUCTION OF SO_2
 - ▶ COMPLETE COMBUSTION
 - ▶ CONTINUOUS OPERATION



The Acme patented Sulphur Burner is especially constructed to operate at a controlled rate sufficient to burn off the accumulation of carbonaceous scum that retards the operation of an ordinary sulphur burner. In an ordinary burner, the addition of a fresh charge of sulphur to the burning surface disrupts the burning rate for several hours. The Acme Sulphur Burner has a special feeding device that feeds melted sulphur to the burner in a manner that does not disturb the burning surface, at the same time maintaining a constant level of burning sulphur. Whether operated at atmospheric pressure, high compression, or under vacuum, the Acme Sulphur Burner attains maximum production of SO_2 from available supplies of sulphur.



OPERATING PROCEDURE

Solid sulphur is charged into the hopper of the melting chamber, around which live steam is introduced at about 25 pounds gauge pressure (if steam is not available, an electric heating element is supplied). The melted sulphur is fed to the combustion chamber by means of the feeder, which automatically maintains the correct level. Compressed air, or air furnished by a blower, is used for combustion. The quantity of air supplied regulates the concentration of SO_2 produced.

Since the introduction of the feed is below the surface, the burning area is never disturbed. This, together with the unchanging level of molten burning surface, and a controlled air supply, guarantee a constant burning rate and thereby a uniform production of SO_2 .




When inquiring check CP 8989 on handy form, pgs. 2-3



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When inquiring check CP 8990 on handy form, pgs. 2-3

Page 10

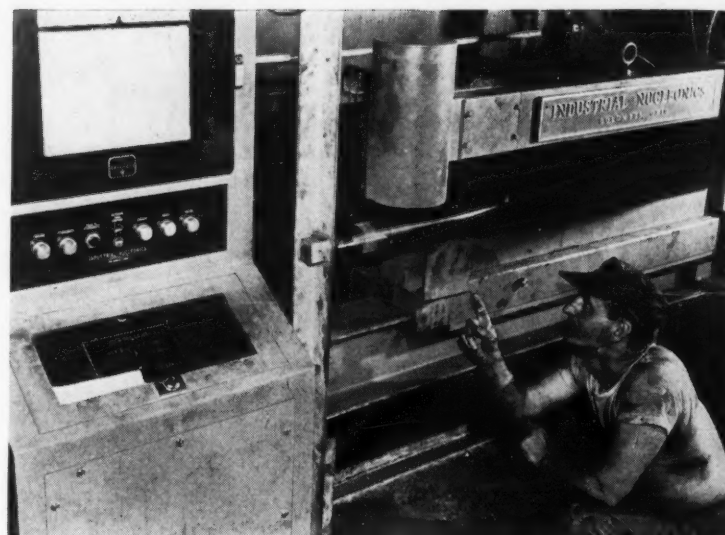
Continuous Thickness Record Supplants "Cut and Try" Of Calendering Rubber

New Solutions
OF PROCESSING PROBLEMS

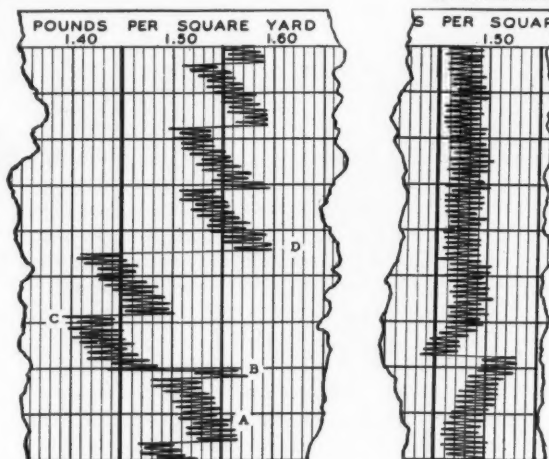
Experienced operators used to cut chunks of passing rubber to check thickness; now they use a beta ray gage — with better results

PROBLEM: Like most plants making rubber covered fabrics, The General Tire & Rubber Company of Akron used to station a seasoned operator at their calender rolls. His job was to cut samples from the passing stock and adjust the rolls for proper thickness. When cyclic thickness variations due to slightly "out of round" rolls were added to sudden changes due to addition of rubber in pigs rather than in continuous ribbons, his test amounted to an experienced guess. Consequently, the plant always had a sizable percent of reject material where rubber was too thin and also plenty of stock where rubber was too thick. (With typical rubber material costing 40c/lb.)

Solution: The company was among the early users of the beta ray gage for



Operator points to capsule containing Strontium 90 isotope. Detector can be seen directly above the rubber covered fabric. Console is at left



Used to record control obtained by older sampling method, gage shows typical errors and poor accuracy. When operator can use the recorder reading, result is more like smooth graph

checking rubber. Similar gages were being used on aluminum and steel, plastics, textiles, and paper. Beta ray gage does not contact the material being tested. Several small grains of Strontium 90, a radioactive isotope, are held in a capsule under the web of material to be measured. Above the material is a detector which picks up the beta ray radiation from the isotope. For any given material, the fraction of beta rays that are

stopped in it will be proportional to the weight per unit area.

Another model of the gage (Model R AccuRay, see Process Instrumentation Section, February 1952) provides range selection for widely different thicknesses and features a movable detector for obtaining a profile of the moving sheet. Source-detector units capable of measuring up to 24, 36, 48, and 60" from edge of sheet are available. Dual installations furnish simultaneous measurement at both edges of the sheet for closer calender screwdowns. Accuracy is about 1%; scale calibrated directly in lb/sq yard.

Results: What they found when they installed the equipment can be shown by comparing the two graphs. In the first case, the recorder is installed but thickness control is by the older sampling method. Reading from the bottom up, A is where operator cut a sample. Noting that it was over weight "specs," he adjusted the rolls (shown at B) for a lighter coating. Large changes like B and C are due to either roll adjustment or pigs of rubber. The faster cycling is due to the slightly out of round rolls.

Adjustment at B threw the fabric on the light side, as operator found when he sampled again at C. This time he adjusted rolls for greater thickness — resulting in larger overweight error than he originally found. Note difference of control when the beta ray was used

CHEMICAL PROCESSING

(second graph). Here, the operator noticed a trend toward heavy coating. He made one adjustment and the recorder verified that it was the proper one.

Plant Engineer Glen Orr feels that use of the gage is a very important improvement of their process. He cites continuous measurement of weight per unit area; running record which can immediately be worked into adjustments; and the fact that this method allows for a finer measurement than has ever before been available.

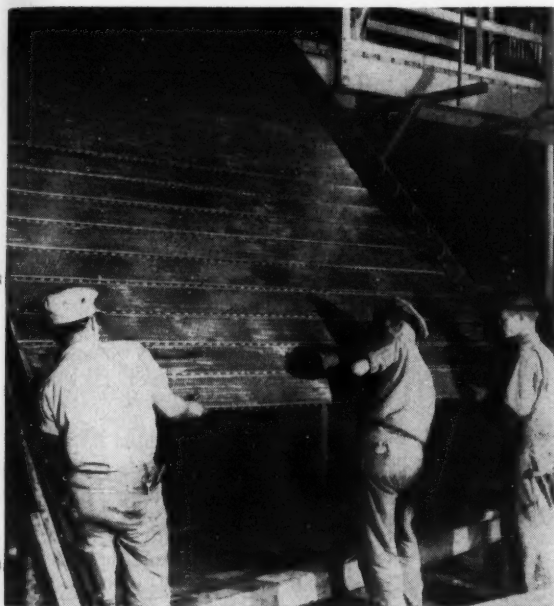
(Beta Ray Gages were developed by Industrial Nucleonics Corporation, Dept. CP, 1205 Chesapeake Ave., Columbus 12, Ohio . . . or for more information check CP 8991 on handy form, pages 2 and 3.)

No rust, product contamination when stainless flights replace iron in GR-S rubber dryer . . .

perforated type 316 sections undergo no corrosive reaction from acids, salt and high humidity

Problem: During the war, government-owned plant at Port Neches, Texas used black iron flights on conveyor belts used in moving wet crude rubber through drying ovens. Operating conditions of this process are conducive to corrosion because of high humidity and presence of acid and salt. Difficulties arose from rust and contamination of product. When this plant, operated by United States Rubber Co., was to be modernized, attention was directed to this situation. As iron flights were the cause of unfavorable reactions a suitable replacement was sought.

Solution: Stainless steel was the logical replacement.



Stainless steel dryer flights replace iron types at Port Neches, Texas GR-S synthetic rubber plant

New conveyors consist of 173 hinged flights, or sections, of perforated 16-gage, Type 316 stainless steel, 12" long and 115" wide (see illustration). Eight complete new flights were installed to move rubber through dryers. (GR-S rubber is made in a complex series of processes which includes copolymerizing butadiene and styrene, coagulating the resulting latex in an acid-brine bath, and then washing and filtering the crude rubber "crumb".) As it leaves the filter at this point the rubber contains approximately 30% water, along with a

(Continued on page 16)

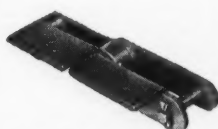
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Link-Belt Drag Chain Conveyor, employing a single strand of H-480 Promal chain, handling 150 tons per hour of ground limestone. Here the right chain for a specific job means more efficient performance, reduced operating costs.

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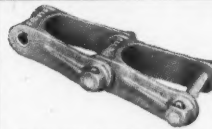
Class SS bushed roller chain with straight sidebars—for practically any conveying or elevating service.



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Link-Belt offers no single "cure-all" chain to handle every job. From the most complete line of chains and sprockets—we can recommend the best type to fit your particular requirements—cast, combination, forged and fabricated steel, roller or silent. So, whatever your chain problems, big or small, Link-Belt engineers will work with you or your consultants to help solve them.

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CHAINS AND SPROCKETS

When inquiring check CP 8992 on handy form, pgs. 2-3

EIMCO

Precoat Filters

The EIMCO precoat type vacuum filter offers many advantages in filtration work.

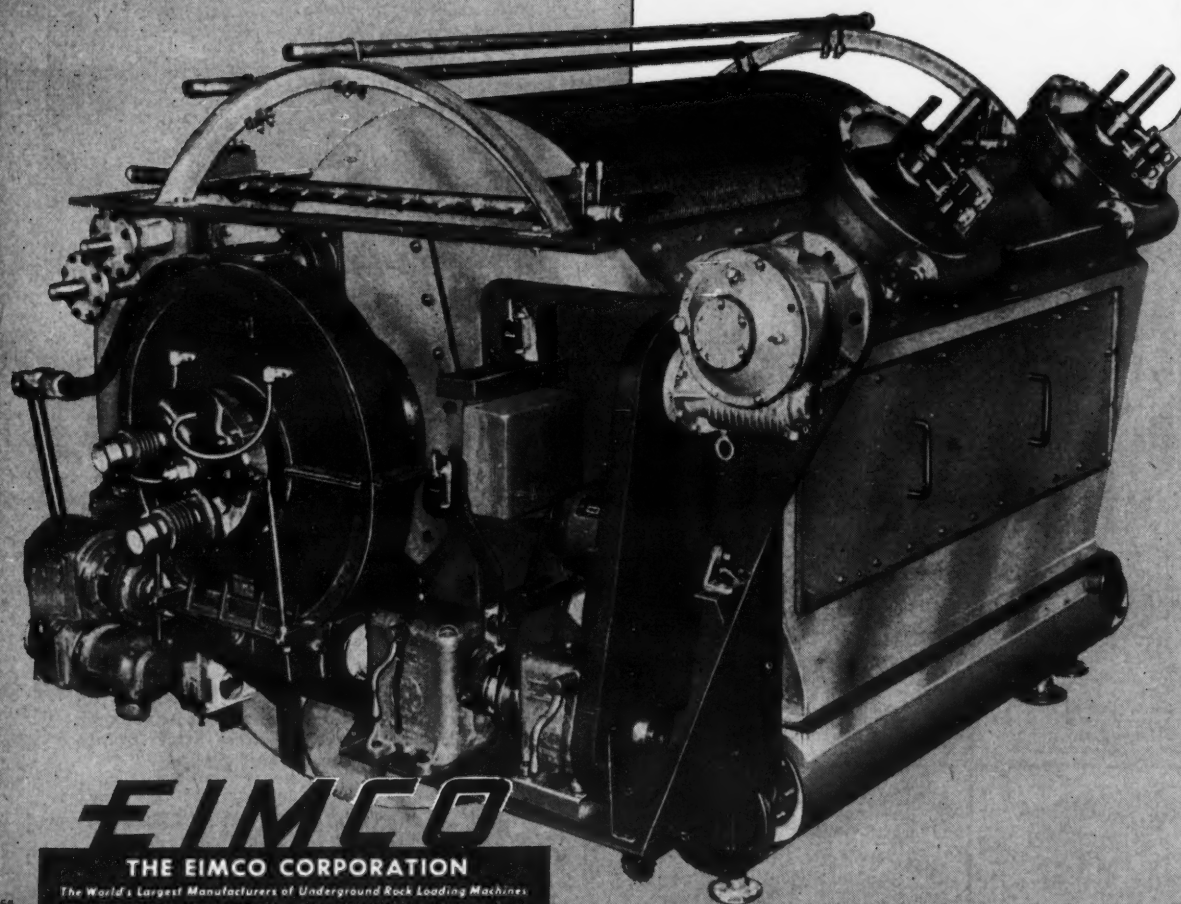
Every EIMCO filter is designed so that it may be converted to hooded type in the field, without structural changes in the original unit.

Some other advantages include: Unit assembly of feed mechanism, automatically controlled knife feed, less slurry waste, clear filtrate and less time wasted between production cycles.

EIMCO precoat filters are carefully engineered and constructed to meet the specifications of the user. They are being run with outstanding success in many industries where solutions carry fine particles in suspension and where the solids are of a sticky or gummy nature.

Write for more information on EIMCO precoat filters.

Cutaway drawing of knife advance mechanism; automatically controlled micro-advanced knife feed.



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NEW SOLUTIONS

Hydrogen plant was snarled maintaining 2200 feet of underground piping . . .

pipe buried under concrete made gas pockets possible

Problem: Although less than five years old, a large percentage of the underground piping had had to be replaced at Wilson & Company's Oklahoma City hydrogen plant. The fact that much of the piping was buried in or under concrete was dangerous since heavier-than-air propane could have accumulated in pockets or sewers. At the same time, concrete slowed repair and replacement to a crawl. This was another serious threat to the plant which depended on a 24-hour day for its continuous process.

Solution: Cathodic protection specialists were called in and designed a system for protecting the 2200 feet of pipe below ground. In order to make protection complete, they included steam and air lines, water service lines, process solution piping and underground conduit in the same system. A totally oil-immersed Class 1, Group D explosion-proof rectifier was connected to buried graphite anodes on one side and to the electrically bonded piping system on the other.

Results: In the 12 months following installation of the protective system, only one leak was encountered.

(System designed and installed by The Harco Corporation, Dept. CP, 16918 Broadway, Cleveland, Ohio . . . or for more information check CP 8993 on handy form, pgs. 2 & 3.)

Sprays heated air out across floor areas

Bulletin explains principle utilized by manufacturer's oil burners in spraying heated air out at floor level in the working area where it is needed rather than overhead. Two models are described in six-page publication: one with an output of 140,000 Btu/hr, and the other rated at 160,000 Btu/hr.

Both types are fully illustrated, and a number of applications are shown. Bul L-4782 is issued by Faegol Heat Machine Co., Dept. CP, 5725 Mt. Elliott Ave., Detroit 11, Mich. When inquiring specify CP 8994 on handy form, pages 2 and 3.

For more information on product at left, specify CP 8995 . . . see information request blank between pages 2-3.

NEW SOLUTIONS of processing problems

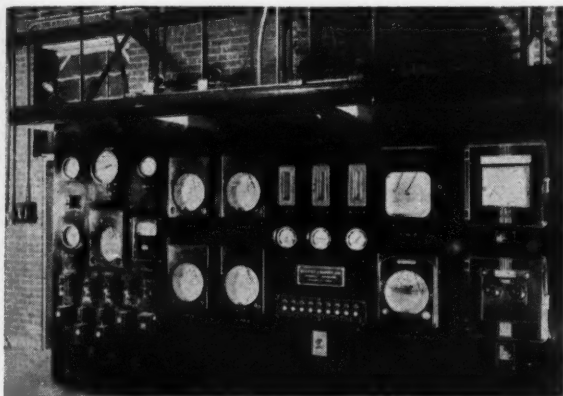
(Continued from page 9)

crudes to high temperatures before they enter column, since almost all heating is done in column, under vacuum, by the Dowtherm. Thus, possibilities of polymerization are essentially eliminated. Ejector system on column maintains about 5 mm absolute pressure. Dowtherm holds temperature in column within a narrow minimum range, depending on the type of crude fatty acids being distilled.

Stripping steam enters bottom of column and blows upward through the thin layers of material on trays. These thin layers promote more efficient utilization of the steam, and also assure that vacuum is about the same on all material being stripped. (In batch pot still, material toward bottom does not have as high an effective vacuum as that near top.)

Overhead product passes through Flick separator, stripping and final condensers and then through vapor scrubber. Residue is pumped from bottom of column.

Results: Using same type of crude stock as supplied to the batch stills, as well as crudes having lower splits, production equals and has exceeded that of the batch



Central instrument and control panel for fatty acid stripping operation

stills. Product quality is constant, excelling that of the batch stills and requiring only one instead of two distillations. Double distillation yields quality impossible to obtain with batch processes.

Injection steam consumption is only a small fraction of that previously used; floor space requirements are only one-half of that previously required. Labor is the same but work is much cleaner and more efficient. Yields are still the same — 2% pitch and 98% fatty acids.

Actually, this continuous fatty acid distillation plant has been in operation for about five years. A second unit, in operation for about a year, continues to show the advantages of the original installation.

(Designed and built by Wurster & Sanger, Inc., Dept. CP, 5201 Kenwood Ave., Chicago 15, Ill. . . . or for more information check CP 8996 on handy form, pgs. 2-3.)

Looking for shortcut solutions to processing and engineering problems? See pages 132, 134, 136, and 138.



HAVE YOU PROBLEMS IN PRODUCING

Catalysts?

... then find out how
SIMPSON MIX-MULLERS
can increase production and
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DO YOU REALLY KNOW WHAT MULLING IS ... ?

Watch the practiced technique of a chemist's mortar and pestle—the intensive smearing and rubbing action—and basically, *THAT'S MULLING!* Mulling with a Simpson Mix-Muller utilizes a special pair of revolving mullers and plows mounted on a stationary pan. The mullers are adjustable and are supported by rocker arms so that they can be free to ride on the material—creating a true mulling action as they revolve . . . eliminating balling and quickly developing maximum blending of the mix.

Simpson Mix-Mullers may be specially equipped for heating and cooling while mixing—for mulling under vacuum or pressure—for corrosive materials—or to function as a reaction vessel.

It takes today's modern technology to profitably produce catalysts that are of uniform quality—that have excellent heat, steam and chemical stability. Speed and accuracy must be combined to assure a better end product at lower cost.

Increasing numbers of catalyst producers are finding that Simpson Mix-Mullers prepare their product much faster and more accurately than with any other method. There is no balling of materials. Blending is completely uniform. The mixing cycle is shorter for comparable results. That's because Simpson Mix-Mullers incorporate the true mulling principle of controlled mixing.

It's true with the production of catalysts . . . and it's true throughout the chemical process industries . . . today more Simpson Mix-Mullers are in use than ever before. If you prepare dry—semi-dry—or pasty materials—then consult a National Engineer or send for our latest catalog.



SIMPSON Mix-Muller Division

NATIONAL ENGINEERING CO. 604 Machinery Hall Bldg., Chicago 6, Ill.

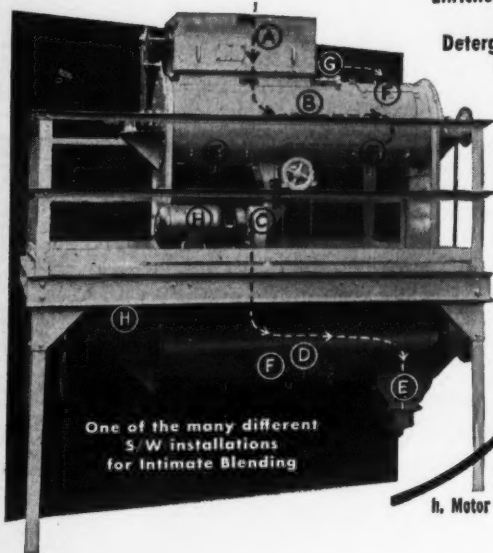


When inquiring check CP 8997 on handy form, pgs. 2-3

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Enriched feed blends • Ceramics
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and many other
fine powder blends



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When specifications call for powder blends of high uniformity, Sprout-Waldron's *Intimate Blending Systems* provide the perfect solution. Engineered to individual needs, these versatile systems are indicated wherever powders 100 mesh or finer are to be blended to smooth-flowing, lump-free uniformity — especially formulas including liquids or fibers as well.

Ruggedly constructed, the compact assemblies operate on the gravity flow principle and take up a minimum of floor space. They are misers on power consumption, too — are quiet, smooth-running, and clean.

Dust-free operation is another vitally important S/W feature.

Easy accessibility and simplicity of interior for cleaning, etc., assure advantages which have been developed through long practical experience. The minimum of moving parts means additional economies in maintenance.

Sprout-Waldron specialists have successfully solved intimate blending problems in a great many widely different processing plants from coast to coast. Their expert advice is yours for the asking. It may help step up production, improve your product and working conditions in the plant, and increase profits. Write for Bulletin 1-846 today! Address Sprout, Waldron & Co., Inc., 10 Logan Street, Muncy, Penna.

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Manufacturing Engineers
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NEW SOLUTIONS of processing problems

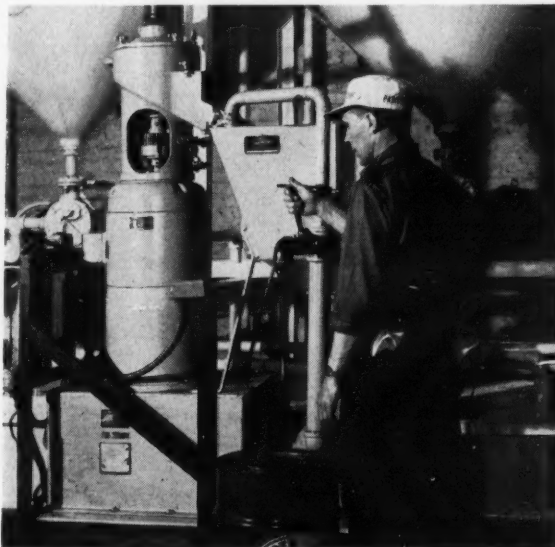
Pan-cooling of lithium grease not necessary with revised milling procedure . . .

grease is made in steam-heated kettle, milled, and then packaged directly or stored

Problem: Conventional way of making lithium lubricating grease at Southwest Grease & Oil Co., Inc., Wichita, Kans., used up a great deal of valuable time. Greases were made in a direct-fired kettle, at a temperature above 400°F, in order to put the lithium soap in solution. Then, the grease was cooled to block form in pans. Following this, the blocks were milled to the grease-like flowable product.

Solution: Company has installed a Morehouse Speed-line grease mill and deaerator, and has been able to change the process to avoid pan-cooling. Now, grease is made in steam-heated kettle (temperature of about 325°F), run through the mill at a somewhat lower temperature, and then put directly into shipping containers or storage.

Mill processes the grease between a "Carborundum" stone high-speed rotor and a stone stator, both in a



Grease is milled in unit at left, then flows into top of deaerator. Operator is drawing off finished product from deaerator recirculation line

horizontal plane. Clearance between rotor and stator can be adjusted while machine is operating. The entire unit, including deaerator, can be mounted on a skid or casters so it can be moved to various locations in the plant. Processing chambers are polished and readily accessible for cleaning.

Discharge from mill falls to deaerator. A pump recirculates grease from bottom of deaerator to top. Finished product is withdrawn from a tee in this recirculation line. Rates as high as 8000 lb/hr in some installations.

Results: Processing time is much less because of the elimination of pan-cooling. Since a quality grease can be made at a lower temperature — in steam-heated instead of direct-fired kettles — fuel requirements are less.

(Mill with deaerator used in this installation was made by Morehouse Industries, Dept. CP, 1156 San Fernando Rd., Los Angeles 65, Calif. . . or for more information check CP 8999 on handy form, pages 2 and 3.)

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Available with screwed or socket weld ends. 3000-lb. sizes 1/8" to 3"; 6000-lb. sizes 1/8" to 2".



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With screwed or socket weld ends. 3000-lb. and 6000-lb. service.

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With steel-to-steel, bronze-to-steel, stainless steel-to-steel or orifice seats. 3000-lb. service only.

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CATAWISSA Ends Guesswork in Union Requirements!

CVF write for CATALOG 11 showing the complete Catawissa line

CATAWISSA VALVE AND FITTINGS COMPANY
620 Mill St. • CATAWISSA, PA.

When inquiring check CP 9000 on handy form, pgs. 2-3

CHEMICAL PROCESSING

NEW SOLUTIONS

Treatment with allyl starch ends crazing of plastic inspection windows . . .

use of insecticide in flour chutes made windows unusable

Problem: Chutes for handling flour at a Midwest milling concern have acrylic plastic inspection windows (glass is not suitable due to breakage danger) at various points. Frequent use of an insecticide (ethylene dichloride base) is required in these chutes to control weevils, etc. Insecticide treatment crazed the inside surfaces of these windows (ethylene dichloride is a solvent for acrylic plastics) and made their inspection impossible.

Solution: New clear panes of acrylic plastic were treated by dipping them in a solution consisting of approximately 80% allyl starch, 20% plasticizer, and a trace of cobalt naphthenate drier. Treated panes were then used to replace the crazed ones.

Results: Inspection windows appear to be permanently resistant to the crazing effects of the insecticide. They have been in use now for an extended period and are still as clear as the day they were installed.

(Allyl starch is a product of General Mills Research Laboratories, Dept. CP, 2010 East Hennepin Ave., Minneapolis 13, Minn. . . or for more information check CP 9001 on handy form, pages 2 and 3.)

Tubing failure studies in various services

Many factors affecting tube life in high-pressure, high-temperature applications are presented in 39-page, illustrated publication. Results are given of a great number of investigations of failures of carbon steel, intermediate chromium-molybdenum alloy steel, and stainless steel tubing in boilers, cracking stills, heaters, and heat exchangers.

Text should prove of interest to design engineers and to those concerned with obtaining optimum failure-free service from their tubing installations. Bul TR-516 is issued by The Babcock & Wilcox Co., Tubular Products Division, Dept. CP, Beaver Falls, Pa. When inquiring specify CP 9002 on handy form, pages 2 and 3.

For more information on product at right, specify CP 9003 . . . see information request blank between pages 2-3.

Wiggins Gasholder

installations
in the 3 years
since introduction!

Operates at pressures up to 20" of water. Gas tightness and impermeability of Wiggins dry seal proved in 15 years' service under actual operating conditions. Ask about converting your present gasholders to Wiggins principle.

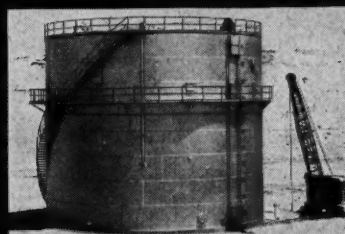
WRITE FOR NEW BULLETIN WG-22
OR REFER TO BUILDER'S COMMITTEE REPORT
(May, 1951), AMERICAN GAS ASSOCIATION

no doubt about it . . . simplified Wiggins design is a better way to store industrial and chemical process gases



it's the **only**
gasholder
that uses

**NO WATER
TAR
GREASE**



it's the **only**
gasholder with
**AN ABSOLUTELY
DRY, FRICTIONLESS
SEAL**



Converted from old style!

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"Drycleaners' Rx" for filtering solvent crystal-clear

MODERN drycleaning plants have discovered that the prescription for keeping their cleaning fluid crystal-clear... *an absolute necessity if garments are to be thoroughly cleaned*... is Celite* filtration.

The effectiveness of Celite can be attributed to these important factors which make it unique among filter aids:

Carefully processed from the purest deposit of diatomaceous silica known,

Celite is available in nine standard grades—each designed to trap suspended impurities of a given size and type. Whenever you reorder, you are assured of the same uniform, accurately graded powder received in your initial order. Thus, with Celite, you can count on consistent clarity and purity in your filtrates—at highest rate of flow—month after month, year after year.

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many liquids for which Celite has provided the absolute clarity vital to a successful operation. The proper grade of Johns-Manville filter aid will assure you the same results—regardless of the product or process involved. To have a Celite Filtration Engineer study your problem and offer recommendations, simply write Johns-Manville, Box 290, New York 16, New York. No cost or obligation.

*Reg. U. S. Pat. Off.



Johns-Manville CELITE

FILTER AIDS

When inquiring check CP 9004 on handy form, pgs. 2-3

NEW SOLUTIONS of processing problems

(Continued from page 11)

certain amount of sulfuric acid and salt not completely removed by washing. To dry the "crumb" so that it can be baled for shipment, the conveyors carry it from the filter to the floor above and through ovens held at about 175°F.

Results: Plant engineers have found that difficulties of a rust-contaminated product are over because there is no corrosive action on the stainless steel. Also particles of crude rubber do not adhere to stainless steel as they did to the black iron. Thus, dried product is more easily removed from the conveyor and perforations in the plate no longer become plugged. An additional feature is that stainless steel flights easily withstand mechanical flexing inherent in this type of conveyor. The stainless flights, along with other improvements, boosted production from a rated 60,000 long tons to more than 72,000 long tons.

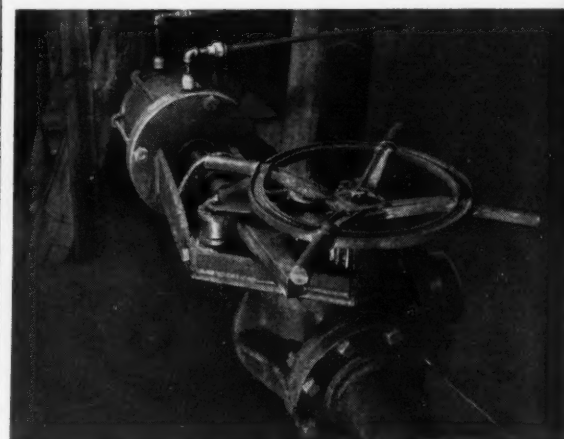
(Summary of information received from Committee of Stainless Steel Producers, American Iron & Steel Institute, Dept. CP, 350 Fifth Ave., New York, N. Y.)

Kraft pulp processors finding what valves to employ where corrosion, erosion are high...

service reports point to quick opening, shearing action, tight shut off features of these valves

Processing of kraft pulp in paper mills involves use of chemicals which, due to their corrosive and/or erosive nature, make selection of suitable metals for process systems a difficult task. Here, we shall concern ourselves merely with selection of valves for such a kraft pulp process system.

Added to the problem of selecting a valve of the proper metal for resistance to corrosion and erosion, other



Digester blow lines to blow tank in a kraft paper mill showing Nordstrom 8" switching and isolating valves

valve features are usually required. Often it is highly important that valves continue to close tightly no matter how many times they are operated. Plug type valves have preference to gate types, but solids (such as wood chips, fibers, etc.) tend to settle out of liquids and prevent tight closure. Another requirement is the ease with which the valve can be operated — the easier the better, of course.

A survey of various kraft paper mills indicated that Nordstrom lubricated valves constructed of Ni-Resist or

CHEMICAL PROCESSING

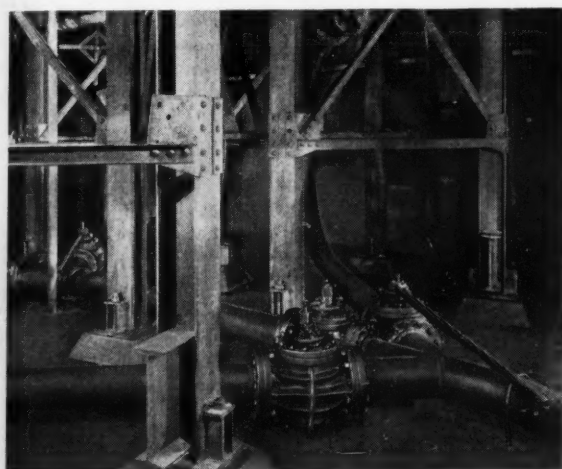
NEW SOLUTIONS of processing problems

semi-steel are being employed at strategic points of process systems to solve these problems. Following is a tabulation of such service applications:

SUGGESTED APPLICATIONS FOR NORDSTROM VALVES IN KRAFT PAPER MILLS

| Application | Material Flowing | Approx. Temp. Range, °F | Approx. Pressure, psi | Usual Size or Remarks |
|------------------------------------------------------|-----------------------------------------|-------------------------|-----------------------|------------------------|
| Digester sampling valve | Kraft pulp & cooking liquors | 330 | 100 | 1 1/2" Flanged |
| Digester top relief | Relief gases & vapors | 330-400 | 100 | 1 1/2" Flanged |
| Pulp washer inlet | 2% Kraft pulp in weak black liquor | 150 | 20 | 6" Flanged |
| Black liquor to recovery furnace | Thick black liquor | 285 | 30 | 1 1/2" Flanged |
| Sample test cocks | Hot green liquor | 180 | 30-40 | 3/4" Threaded |
| Causticizing | Green & white liquors containing sludge | 150-180 | 20-40 | 6" Flanged (generally) |
| Weak black liquor in pulp wash-liquor ing & recovery | Weak black liquor | 100-180 | 20-40 | To suit line |
| Wash water lines to pulp washer | Hot water | 120-180 | 30-50 | To suit line |

Service reports in these applications state that the Nordstrom valve's greatest advantages are found in its



Nordstrom application switching valve, cylinder operated on digester black and white liquor measuring tanks. This is a 6", 3-way, 2-port valve made of Ni-Resist. The 4" line on the right foreground carries liquor from storage tank and passes through the valve into a measuring tank. The valve can be switched by remote control to allow the liquor to flow to the digester filling pump through the 6" line on the other end of the valve which is hidden by the pneumatic cylinder.

quick opening feature, its shearing action, and the fact that it can be cast in materials suitable to particular characteristics of the material flowing. Its tight shut off after repeated opening and closing, as well as its self-lubrication, are important advantages. Remote operation and suitability to volume measuring applications further increase advantages.

(Nordstrom valves are a product of the Rockwell Manufacturing Company, Dept. CP, 400 N. Lexington Ave., Pittsburgh 8, Pa. . . or for more information check CP 9005 on handy form, pages 2 and 3.

FEBRUARY, 1952

MECHANIZE MATERIALS HANDLING

**WITHOUT COSTLY INSTALLATIONS
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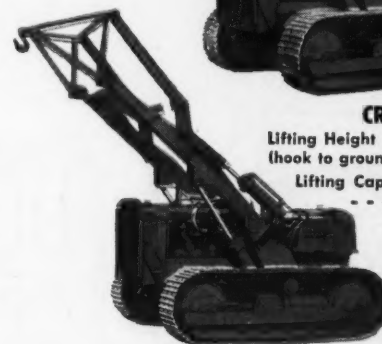
**use an Allis-Chalmers HD-5G
and Tracto-Shovel
Attachments**



**LIFT FORK
ATTACHMENT**
Stacking Height
(under forks) - 106 in.
Lifting Capacity
- - - - 4,000 lb.



CRANE HOOK
Lifting Height
(hook to ground) - 138 in.
Lifting Capacity
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You speed materials handling "right now" when you put this fast-working tractor-shovel combination on the job. The HD-5G starts boosting production without waiting for costly installations or changes in plant layout. Digs into the toughest jobs, indoors or out . . . lifts, loads, excavates, pushes, tows... handles all materials, bulk, solid or packaged.

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Choice of thirteen interchangeable Tracto-Shovel attachments makes the HD-5G a one-tractor material handling fleet. Special buckets, lift fork, crane hook, rock fork, 'dozer blades and others may be interchanged in a few minutes with simple tools.

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HD-5G THE MODERN TRACTOR IN EVERY WAY

Designed For Your Job • Built To Take It • Easy To Service
Easy To Operate

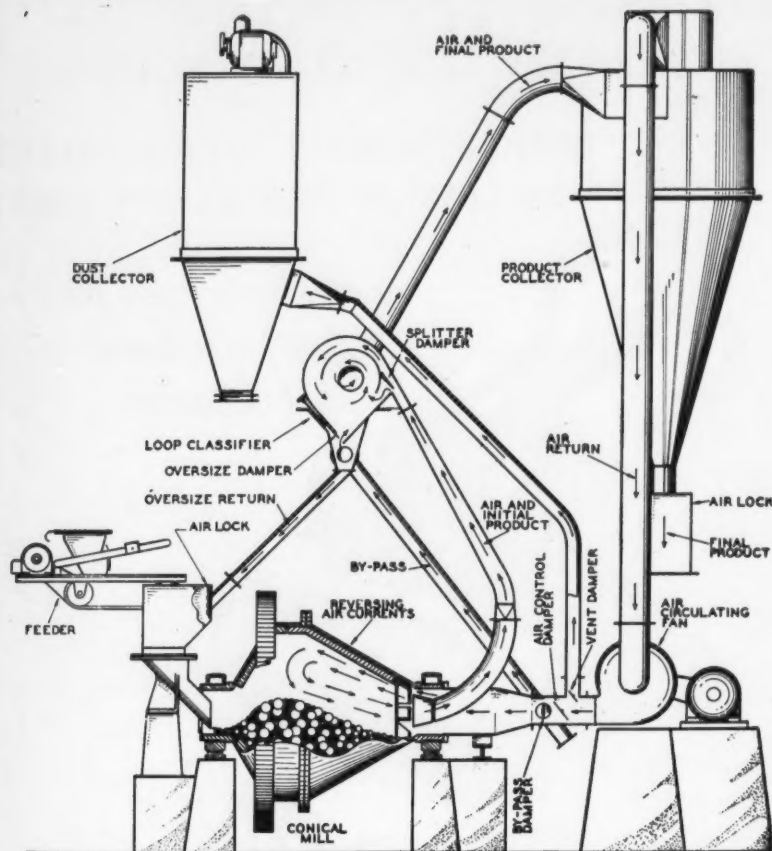
40.26 drawbar hp. • 1 cu. yd. bucket
Dumping height — 9 ft., 1/4 in.

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Please send me literature on the Tracto-Shovel
line ranging from 1 to 4 cu. yd.

Name.....
Title.....
Company.....
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When inquiring check CP 9006 on handy form, pgs. 2-3



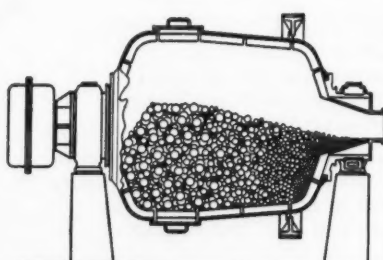
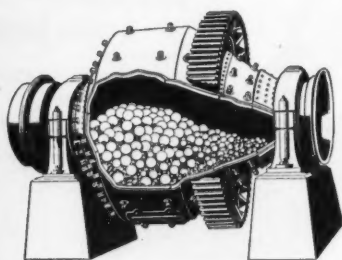
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Conical Mills

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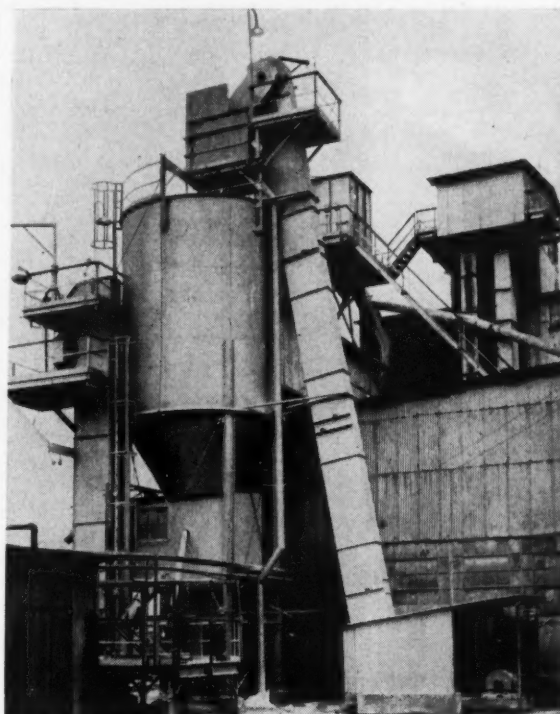
NEW SOLUTIONS of processing problems

Bucket elevator maintenance costs cut from 300 to \$25 per month . . .

replacement of old elevator with new has already saved \$4000 maintenance in first 14 months

Problem: Maintenance costs for vertical bucket elevator handling a calcined fluoride chemical in a midwestern installation averaged as high as \$300 per month. The material weighs 80 lb/cu ft, and was handled at temperatures ranging from 300 to 400°F.

Solution: About 16 months ago, the company replaced the old vertical elevator with a single-strand, duplex-bucket, perfect-discharge type called the "Multi-



Inclined elevator carries four tons of a calcined fluoride chemical per hour; temperatures go as high as 400°F

Vator." Rated at a nominal capacity of three tons per hour, the unit is actually operating at four tons per hour. It contains 6 x 6" duplex buckets on 66' pulley centers. Chain travels at 60 fpm.

This type of elevator has been designed to eliminate possible "trouble spots." For instance, use of single strand of chain minimizes maintenance of moving parts and eliminates uneven wear and stretch found in some double-strand elevators. Wheels have a series of "shoulders" instead of teeth, avoiding grinding action between chain barrel and teeth. This design will not permit slippage under moderate loads, but will prevent chain breakage in the case of severe overloading. It eliminates need for shear pins, fluid couplings, slip starter couplings, and other such components.

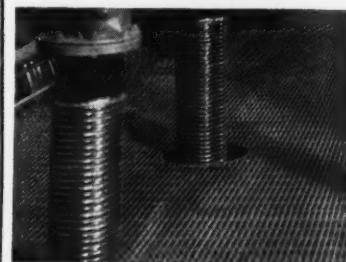
Buckets are cast integral with a chain link. They have no projecting bolt heads inside to which soft or sticky materials can adhere and collect. Chains, buckets, and wheels are made of special heat-treated alloy steel which is about three times as strong and hard as conventional malleable iron.

Results: On December 11, 1951, elevator had 9500 service hours under its belt, accrued over a 14-month

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It's tailor-made to suit your particular plant requirements



Wherever walking, working or wheeling surfaces are required Open Steel Flooring provides basic safety, strength and endurance. It offers the practical and versatile advantages of sure footing, maximum ventilation and light, and adaptability to your specific load-bearing and heavy duty needs.

The new Idea Book "Versatile" shows where and how to use Open Steel Flooring—gives Specifications and full description of this top quality grating.

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Long Island City, N. Y.

STANDARD STEEL SPRING CO.
Gary, Indiana

When inquiring check CP 9008 on handy form, pgs. 2-3

CHEMICAL PROCESSING

When inquiring check CP 9007 on handy form, pgs. 2-3

period and normally operating 24 hours per day, seven days per week. Cost of maintenance averaged \$25 per month. Projecting maintenance and repair over a period of two or three years, the company estimates that \$40 to \$50 per month is a fair future average. Still, this estimate is much lower than the \$300 per month with the old elevator. Already the new elevator has saved the company close to \$4000.

As a sidelight, it is interesting to note that the elevator was installed at an incline of 2-1/8" in 12" from the vertical (see photograph). This eliminated the need for a horizontal conveyor at either top or bottom.

(The "Multi-Vator" is made by Beaumont Birch Company, Dept. CP, 1505 Race St., Philadelphia 2, Pa. . . or for more information check CP 9009 on handy form, pages 2 and 3.)

Survey proves standards save dollars . . .

one chemical manufacturer reports annual savings of \$1,156,500 by extensive standardization

The benefits of standardization in industry are cited in a 32-page report which presents 140 case studies covering 81 industries and industrial products. Five of the studies relate to the chemical and rubber industries. Close to 2100 companies were polled for data on results obtained by adoption of standards in their operations. Their answers, compiled in the survey, provide proof — in terms of dollars and percentages — of how the use of standards can cut costs.

One large manufacturer of chemical products reported a total direct saving of \$1,156,500 per year by extensive use of standards. That company has taken great pains to keep special records on how much has been saved in each of its divisions throughout the year by the use of standards.

Their standards (more than 2000) are issued to users in "books." Close to 4000 books of all categories are in the hands of plant personnel, and at construction locations, engineering department offices and industrial department offices at 123 different plants and offices. Each year, these locations report the number of standards used and the direct savings resulting therefrom in manhours, materials and purchasing. No indirect or contingent savings are considered.

Field teams of the Economic Cooperation Administration are using the survey in Europe now to show manufacturers in Marshall Plan countries the advantages of standardization in accelerating production of civilian and military goods.

(Copies of "Dollar Savings Through Standards" can be obtained from the American Standards Association, Dept. CP, 70 E. 45 St., New York 17, N. Y. Price is \$1.00.

5 problem castings turn into production jobs

Five-page reprint of an article describes the methods by which intricate stainless steel castings were turned into large scale production jobs. Specific problem castings discussed include a jet engine support casting, four-bladed marine propeller, waste disposal shredder, rocket valve body, and a "sigma blade" for mixing in plastics production. "From Problem Castings to Production Jobs" is issued by The Cooper Alloy Foundry Co., Dept. CP, Bloy St. and Ramsey Ave., Hillside, N. J. When inquiring specify CP 9010 on handy form, pages 2 and 3.

For Elusive and Sensitive PRODUCTS

Finely powdered products will not sift through a **Fulton** W.P.P.L. Bag.

Even moisture or outside vapors from gaseous materials are resisted by the tough lining of paper or plastic that is laminated with adhesive to the inside of this sturdy bag.

Made of either cotton or burlap, **Fulton** W.P.P.L. (Waterproof Paper Lined) Bags are ideal containers for export or domestic shipments of hygroscopic materials, and products to be protected from outside influences. Many manufacturers who formerly used rigid containers are finding this tough, flexible, easier-to-handle textile bag a more advantageous and economical package for their products.

Investigation might prove it's the best container for your product. Just drop a line to the **Fulton** branch nearest you for full information.



Growing constantly in popularity with industry's largest users of paper bags—**Fulton's** famous Multiwalls. All types—pasted or sewn bottom, open mouth or valve. **Fulton** makes the Multi-wall to fit your product!

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When inquiring check CP 9011 on handy form, pgs. 2-3

Now... when production
REALLY COUNTS

**SAVE TIME with
Titeflex**

Titeflex all-metal flexible tubing can help you save time in many operations. Its easy flexibility permits fast installation in difficult locations . . . does away with much slow, laborious pipefitting. Its strength helps you overcome quickly dozens of problems involving vibration, flexing and misalignment in conveying liquids and gases. Titeflex is made in brass, bronze, stainless, Monel and Inconel . . . in types and sizes to handle temperatures to 1550°F. and pressures to 6800 psi. In addition, our engineers will be glad to work with you in developing special types. Write us.



New! Titeflex Bellows

For sealing high pressure valves . . . for absorbing lineal expansion and high frequency vibration in pipe lines. All-welded construction. Made in plain steel, stainless, Monel, Inconel . . . standard sizes 1" to 5" I.D. Plain ends for welding — or supplied with any type of fittings. Write for descriptive literature.

Titeflex, Inc.

509 Frelinghuysen Ave., Newark 5, N. J.

TITEFLEX STAYS TIGHT WHEN THE GOING IS TOUGH

When inquiring check CP 9012 on handy form, pgs. 2-3

NEW SOLUTIONS of processing problems

**Paint maker completes tests
that show him best valve
for tough service . . .**

valve meets requirements of handling liquids with wide differences in density and viscosity

Problem: Paint manufacturers need a versatile valve on their various raw material lines because of the wide differences in viscosity and density of the liquids handled. It is desirable to use the same type of valve on all lines so that any of the liquids can be sent through any line during production operations. This means flexibility of processing set-up, which is usually quite necessary in this type of manufacture.



Some valves may provide tight shut-off on viscous liquids, but it is often found that they leak considerably when used with thin or volatile liquids. Leakage means loss of material and frequent clean-up of floors. On the other hand, valves that shut off tightly with thin liquids often do not permit good flow of the thicker materials.

1 1/2" Figure 3402 Nordstrom valves on manifold lead-in lines. Each line carries different types of raw materials that are to be mixed into batches. Three-way valves were successfully tested on other lines carrying varnishes, oils and driers

Solution: A Chicago paint manufacturing firm, Stewart-Mowry Company, has just completed a two-year series of tests to determine which type of valve they liked best for their needs. Liquids involved in the experiments



Here, a plant chemist is measuring by stick as he draws off varnish from manifold

included mineral spirits, various kinds of varnish, raw oil, linseed oil, tung oil, naphtha, and cobalt and other driers.

Results: F. N. Gundrum, President of Stewart Mowry,

CHEMICAL PROCESSING

NEW SOLUTIONS of processing problems

reports best results with Nordstrom plug valves. In addition to eliminating leakage, this type of valve is outlasting those formerly used ten to one, according to Gundry. As a result of the experiment, the company is installing the valve throughout the plant.

(Nordstrom Valve Division, Rockwell Mfg. Co., Dept. CP, 398 N. Lexington Ave., Pittsburgh 8, Pa. . . or for more information check CP 9013 on handy form, pages 2 and 3.)

Welghs advantages of wet cyclones

Operation and applications of wet-type cyclone or classifier are covered in 16-page, two-color bulletin. Two sectional drawings aid in showing its construction and how it works. Other drawings show how the units can be installed in the process, and an automatic underflow control device that assures a consistently thick underflow or a uniformly sharp separation. A full page is devoted to discussion of typical applications; another to general advantages (compared with conventional classifiers, hydroseparators, thickeners and centrifuges).

Five tables of typical operating data indicate the results that can be expected with this type of equipment. Bul 2500 is issued by The Dorr Company, Dept. CP, Barry Place, Stamford, Conn. When inquiring specify CP 9014 on handy form, pages 2 and 3.

Standard buffer solutions retain original accuracy in polyethylene bottles . . .

same solutions etched glass bottles, changed their pH after prolonged storage

Problem: Buffer solutions used to standardize pH meters of Beckman Instruments, Inc., South Pasadena, Calif., were packaged in glass bottles. A slight change in pH of the buffer occurred due to selective leaching of the glass by the solution during prolonged storage. A special coating was developed and applied to the inside of the glass bottle to assure that every drop of the solution would retain its original accuracy indefinitely. The coating, however, was very expensive and difficult to apply.

Solution: Polyethylene plastic bottles were adopted for packaging these buffer solutions — pH 4, 7, 10, and concentrated pH 7. After filling, each bottle is heat-sealed with a film of polyethylene before the cap is applied.

Results: Solutions now retain their original pH indefinitely. There is no leaching of the polyethylene to alter pH as was experienced with glass bottles.

Other advantages of polyethylene plastic bottles have been realized: heat-sealing the bottle after filling affords an absolute barrier to foreign matter. Contents are readily reached by removing the conventional threaded cap, puncturing seal, and squeezing the flexible bottle.

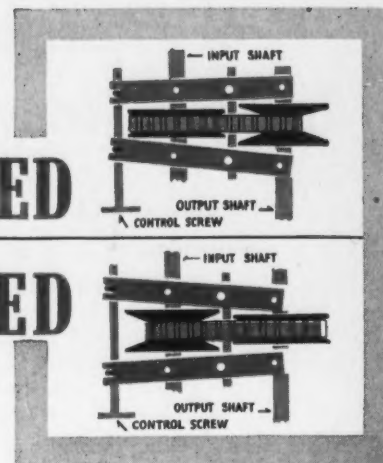
Polyethylene bottles have also done away with breakage due to impact or freezing, as well as eliminating losses during bottling. Shipping is greatly simplified and less costly, too, because no special packaging is required and polyethylene is a comparatively lightweight material.

(Plaxpak polyethylene plastic bottles are a product of the Plax Corporation, Dept. CP, PO Box 1019, Hartford 1, Conn. . . or for more information check CP 9015 on handy form, pages 2 and 3.)

FEBRUARY, 1952

Only

with the P.I.V. variable speed drive can you go
from **MAXIMUM SPEED**
to **MINIMUM SPEED**
in an infinite number
of positive settings!

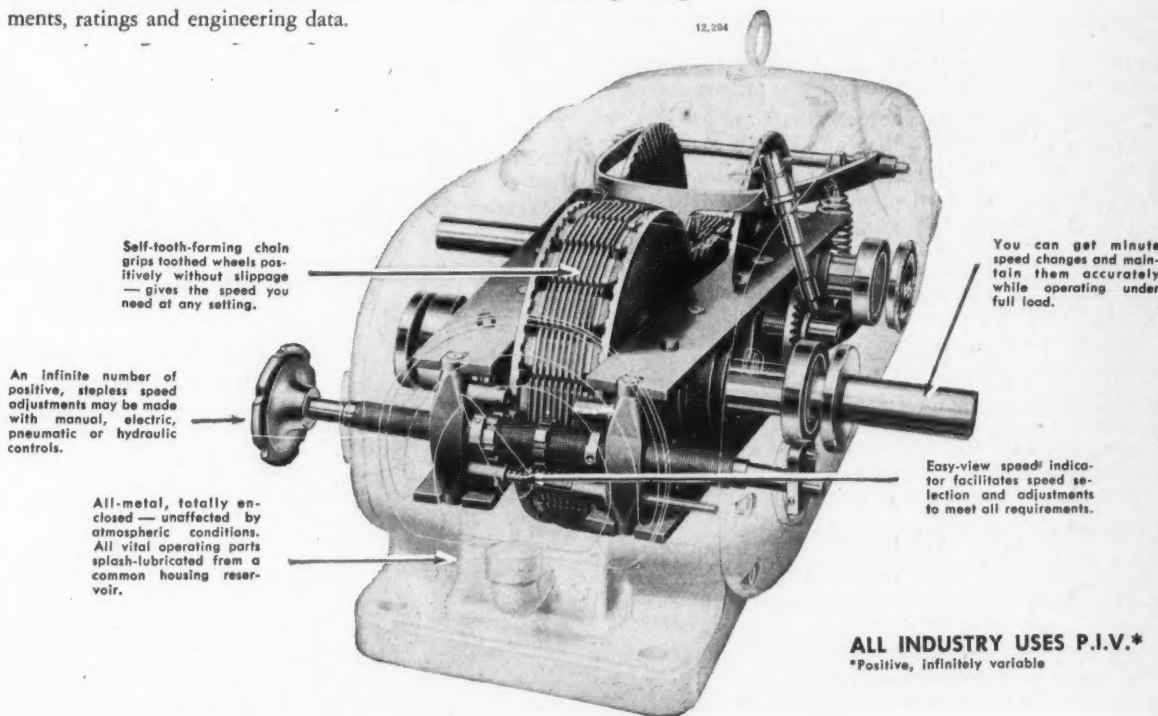


The operation of Link-Belt's P.I.V. Variable Speed Drive is not dependent upon friction for power transmission. Link-Belt's P.I.V. gives you exact speed selection in *positive*, infinitely variable settings . . . transmits full rated horsepower throughout its complete range.

Find out how Link-Belt's P.I.V. can increase the flexibility and efficiency of your machines. Call the branch office near you. Pre-selection of the right P.I.V. variable speed transmission for your needs can be readily obtained together with complete detailed information concerning arrangements, ratings and engineering data.

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LINK-BELT COMPANY: Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa). Offices, Factory Branch Stores and Distributors in Principal Cities.



ALL INDUSTRY USES P.I.V.*
*Positive, infinitely variable

When inquiring check CP 9016 on handy form, pgs. 2-3

Increasing Quantities of Fluorine Compounds To Meet Industrial Assignments

**Certain members of group have greater
ability to reduce surface tension than any
known soap or detergent**

USES: Low boiling members of the fluorocarbon group CF_3H , CF_4 , C_2F_6 and C_3F_8 —are suggested for use where extreme stability and inertness are desired. Possibilities include: refrigerants, turbine impellers, fire extinguishers, anesthetics, propellants, and inert reaction media for various types of reactions such as low temperature ionic polymerizations.

In the acid group, all the metallic salts of trifluoroacetic acid investigated so far (Hg, Al, Ba, NH_4 , Ni, Na, Mg, Ti and Cr) have been found to be water soluble. This suggests a use for trifluoroacetates as a means of obtaining stable, non-oxidizing solutions of difficultly soluble metallic ions—of importance in metallurgical and analytical applications. Heptafluorobutyric and perfluoropropionic acids give promise as chemical intermediates.

Features: Greater weather resistance, heat and chemical stability, fire resistance, fungus resistance and unusual optical properties can be imparted to products when "fluorochemicals" are used as raw material.

It is stated that certain fluorochemicals are better able to reduce surface tension than any known soap, detergent, or surface active agent.

Description: Production of a series of fluorochemicals by the Minnesota Mining & Manufacturing Co., is now on a semi-commercial scale through a patented electrochemical process. Use of free fluorine, with its attendant danger, is sidestepped, and instead hydrogen fluoride is used, because it's easier to handle.

Fluorocarbons

CF_3H , CF_4 , C_2F_6 , C_3F_8 , C_4F_{10}

Saturated fluorocarbons (boiling range from -198°F to $+27.5^\circ\text{F}$) are inert to such reactive chemicals as concentrated and fuming sulfuric acid, permanganate solutions and nitric acid. However, reaction does occur with sodium or potassium at 300 to 400°C .

Fluorocarbons containing less than four carbon atoms boil slightly higher than the corresponding hydrocarbons, while those with more than four boil slightly lower. Their melting points and densities are higher than the analogous hydrocarbons, whereas refractive indices and surface tensions are lower.

They are immiscible in aromatic solvents but are soluble in oxygenated compounds such as ether. Stability to oxidation and heat is exhibited, but they may crack in the flame of a bunsen burner to yield carbon and CF_4 among other products.

corresponding anhydrides, amides, nitriles, acid halides, alcohols and aldehydes can be prepared.

With a boiling point of 120°C at 735 mm, heptafluorobutyric acid ($\text{CF}_3\text{CF}_2\text{CF}_2\text{COOH}$) is characterized as a strong acid and is very hygroscopic. It is non-oxidizing, possesses low surface tension, and its salts are unusually soluble in water. It undergoes the same reactions as trifluoroacetic acid in the formation of esters, alcohols, etc.

Perfluoropropionic acid has a formula weight of 164;

Fluoro-Acids

CF_3COOH , $\text{CF}_3\text{CF}_2\text{CF}_2\text{COOH}$,
 $\text{C}_2\text{F}_5\text{COOH}$

Trifluoroacetic acid (CF_3COOH) is a strong, non-oxidizing acid. It has a boiling point of 71.1°C at 734 mm. Reaction takes place readily with alcohols in the presence of mineral acids to form esters. Metallic salts have been prepared by reaction of the acid with the carbonates or hydroxide. Also, the

Materials

strong, pungent odor; boiling point of 96°C at 740 mm; density of 1.561 gm/cc at 20°C ; refractive index of 1.2838 (n_D^{25}); and is very hygroscopic. Its derivatives parallel those of the other two acids.

Perfluoro Amines

$(\text{C}_2\text{F}_5)_3\text{N}$, $(\text{C}_3\text{F}_7)_3\text{N}$, $(\text{C}_4\text{F}_9)_2(\text{C}_2\text{F}_5)\text{N}$

The perfluoro tertiary amines are chemically stable and do not undergo the typical reactions of organic amines. Following is a table which presents some important properties. The "A" refers to the 15-fluorine atom, "B" to the 17-fluorine atom, and "C" to the 27-fluorine atom compound.

| | "A" | "B" | "C" |
|--------------------------------------|------------------------|-------------------|------------------------|
| Formula weight | 371 | 421 | 671 |
| Boiling point, $^\circ\text{C}$ | 69.3 ¹ | 91.2 ² | 178 |
| Density, 20°C , gm/cc | 1.749 | 1.765 | 1.882 |
| Refractive index, 25°C | 1.2615 | 1.2696 | 1.2903 |
| Viscosity, 20°C , cp | 0.536 | 0.601 | 3.35 |
| | ¹ at 733 mm | | ² at 736 mm |

(This series of fluorine compounds is available from Minnesota Mining & Manufacturing Co., Dept. CP, 900 Fauquier Ave., St. Paul 6, Minn. . . or for more information check CP 9017 on handy form, pages 2 and 3.)

Oils Substitute for Low Mol Wt Butadiene-styrene in Plasticizing Synthetic Rubber

**Extremely high Mooney viscosity synthetic rubbers —
previously considered unusable by rubber industry — can
be processed to give stocks of excellent quality**

INFORMATION on project undertaken by The General Tire & Rubber Co.'s research laboratory shows the possibility of extending very high Mooney viscosity synthetic rubbers of the butadiene copolymer type with certain petroleum oil softeners. Results indicate that rubbers in a range above that considered usable can be processed to

give cured compounds with physical properties approximating those of standard GR-S polymers. Additionally, the less expensive oils substitute for low molecular weight butadiene-styrene polymer that would otherwise be present and thus reduce the price of the final product.

As regards specificity of the oils, a wide range

of aniline point appears permissible, although those with very high points are prone to bleed out of the compounded stock. Low volatility is a requirement since otherwise there would be a loss of oil at the temperatures of rubber processing. Among a number of oils tested, Circosol 2XH and Sundex 53 were found to be satisfactory plasticizers and possessed of low volatility. A table of some properties follows:

| | Circosol 2XH | Sundex 53 |
|--------------------------|--------------|-----------|
| Saybolt viscosity, 210°F | 83 | 83 |
| Specific gravity, 60°F | 0.9452 | 0.9920 |
| Aniline point, °F | 173 | 112 |

Three methods are described as being of value in compounding the oil and carbon black with high Mooney viscosity synthetic rubbers. In the first procedure, an oil-water emulsion is prepared and then added to the synthetic rubber latex. Warming to 125°F follows and then the mixture is coprecipitated by running it into a salt-acid solution. Carbon black is added to the dried material on a mill or in a Banbury.

With the second method, the oil is emulsified and added to the latex already containing the carbon black. Coagulation at 125°F and drying follow. Dry mixing of the high Mooney rubber with oil and black in a Banbury characterizes the third method.

Data from experimental work involving the above mentioned procedures indicate that polymers of almost any toughness can be extended with petroleum oils to give processable rubber stocks. Even those high viscosity synthetics containing high gel contents can be plasticized with large amounts of oil to give quality stocks. It is pointed out that ease of processability decreases, and physical properties tend to become poorer as the amount of styrene in the polymer is reduced.

In comparison with standard GR-S, the oil-plasticized polymers studied have lower rebound at room temperature but approach that of natural rubber at elevated temperatures. Road tests of tires made from this stock show no loss of wearing qualities.

It was determined that in order to obtain products with maximum physical properties and that will handle satisfactorily in conventional rubber machinery, there is an optimum amount of plasticizer for each polymer of varying viscosity level. In compounding, the pigment loading required to give the desired physical properties is best obtained by taking the rubber-plasticizer mixture to be 100% rubber hydrocarbon.

(Circosol 2XH and Sundex 53 are products of the Sun Oil Co., Dept. CP, 1608 Walnut St., Philadelphia 3, Pa. . . or for more information check CP 9018 on handy form, pages 2 and 3.)

Highlights applications for fatty acid esters

Twenty-four-page brochure gives tables of physical and chemical specifications of the non-ionic polyhydric alcohol fatty acid esters (esters of glycerol, glycols, and polyethylene glycols). Use data are listed for such applications as surface-active agents, emulsifiers, stabilizers, defoamers, penetrants, and plasticizers. Special grades of edible surface-active agents are available for use in pharmaceutical products. In addition, interesting applications are described in the fields of plastics, cosmetics, metals, paints, insecticides, textiles, and detergents.

"Esters by Glyco" is issued by Glyco Products Co., Inc., Dept. CP, 26 Court St., Brooklyn 2, N.Y. When inquiring specify CP 9019 on handy form, pages 2 and 3.

FEBRUARY, 1952

You Really Deodorize when you use... ONYX BTC*

Basic Facts about Onyx BTC*

Stable
Non-Corrosive
Uniform
Non-Toxic
in use-dilutions
Odorless
Field-Proved
Non-Irritating
Tasteless

*Trade Mark Reg. U.S. Pat. Off.



There are quite a few ways of "deodorizing."

You can use: the "block-off" method whereby the olfactory nerves are made less sensitive to odors, thus making the odors less noticeable.



You can use: the "odorizing" method . . . whereby the odor you want to kill is covered by another one, more or less pleasant.



Onyx BTC* does the job in one sound way—it kills the micro-organisms that cause the odors. No multiplication of these organisms . . . no odor. It's as simple and effective as that. And BTC solutions are themselves odorless.



ONYX BTC* GERMICIDE . . . DISINFECTANT . . . DEODORANT

Onyx BTC is an alkyl dimethyl benzyl ammonium chloride, sold in 50% aqueous solution to manufacturers of disinfectants, sanitizing compounds and similar products for incorporation in their products and/or dilution for sale as a sanitizing material.

It has been the most widely used concentrated cationic bactericide for many years. Its use as a deodorant is stressed because its effectiveness for this purpose is often overlooked in view of its remarkable properties as a sanitizing agent.

Write for the BTC Handbook!

If you are considering the use of quaternary ammonium salts in any of your products . . . or if you are now using one of these salts for any purpose, you will find the ONYX BTC HANDBOOK useful as well as informative. It covers the characteristics and applications of this standard quaternary compound, and in addition describes some of the many other "quats" produced by Onyx.



ONYX OIL & CHEMICAL COMPANY INDUSTRIAL DIVISION

184 WARREN ST., JERSEY CITY 2, N. J.

CHICAGO • BOSTON • CHARLOTTE • ATLANTA

In Canada: Onyx Oil & Chemical Co., Ltd., Montreal, Toronto, St. Johns, Que. For Export: Onyx International, Jersey City 2, N. J.
West Coast Representative: E. S. Browning Co., San Francisco, Los Angeles

When inquiring check CP 9020 on handy form, pgs. 2-3



FOAM'S A FRAUD... KILL IT WITH DOW CORNING ANTIFOAM A

One part per million of Dow Corning Antifoam A kills foam during caustic soda concentration...

One part per million kills foam during synthetic varnish resin processing...

As little as 0.03 parts per million kills foam during tar evaporation...

And just three parts per million kills foam during strawberry jam concentration.

Odorless, tasteless, and relatively inert physiologically, Dow Corning Antifoam A is effective in a wider variety of foamers than any other material known—and in only trace quantities. Easy to introduce directly, in solvent solution, or even mixed with dry powders, it rapidly liquefies even the most violent and persistent foamers. That kind of efficiency has made it the most economical as well as the most versatile defoamer on the market.

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Midland, Michigan

Please send full information and a free sample of Dow Corning Antifoam A.

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DOW CORNING CORPORATION
MIDLAND, MICHIGAN

ATLANTA • CHICAGO • CLEVELAND • DALLAS • LOS ANGELES • NEW YORK • WASHINGTON, D.C.

When inquiring check CP 9021 on handy form, pgs. 2-3

Page 24

Resin-laminated Glass Fabric Stands 500°F, Keeps Good Flexural Strength

**Polyester expected to find greatest use
in structural materials where strength at
high temperature is factor**

USES: Polyester laminating resin is expected to find its greatest use in the manufacture of structural materials that must maintain high strength at elevated temperatures.

Features: Laminates made with the resin and glass fabric retain high flexural strength (40,000-47,000 psi) when exposed for as long as 200 hr at a temperature of 300°F. Good flexural strength (over 30,000 psi) is obtained when exposed for as long as 24 hr at 500°F.

Description: Heat-resistant properties of Vibrin X-1047 laminating resin are reported to be due to incorporation of triallyl cyanurate, a new chemical. The resin has physical and handling properties comparable to other types of polyesters—with the added benefit of higher strength at high temperatures.

Wright Air Development Center, Wright Field, Ohio, is employing structural material made from the resin and glass fabric for high-speed aircraft and guided missiles. Foreseen are applications in the electrical, electronic, radio, television fields. Following is a tabulation of general properties.

VIBRIN X-1047 and 181-114 GLASS CLOTH LAMINATES

| | |
|----------------------------------------|--------------|
| Tensile @ 25°C, psi | |
| Green | 28,700 |
| Postcured 3 hr @ 500°F | 30,700 |
| Notched Izod impact @ 25°C, ft lb | |
| Green | 20 |
| Postcured 3 hr @ 500°F | 12.5 |
| Rockwell hardness @ 25°C | |
| Green | L-123, M-120 |
| Postcured 3 hr @ 500°F | L-122, M-119 |
| Water absorption, 24 hr @ 25°C, % gain | |
| Green | +1.2 |
| Postcured 3 hr @ 500°F | +1.9 |

(Product of the Naugatuck Chemical Division of the United States Rubber Company, Dept. CP, Rockefeller Center, New York 20, N. Y. . . . or for more information check CP 9022 on handy form, pages 2 and 3.)

UNCURED VIBRIN X-1047

| | |
|------------------------------------------------|-------------|
| Appearance | Clear straw |
| Hellige color | #5 |
| Viscosity (Disc) @ 25°C | 45 poises |
| Refractive index @ 20°C | 1.5156 |
| Specific gravity @ 25°C | 1.209 |
| Cure rate @ 110°C (metal cell), sec | 87 |
| " " @ 100°C (10 x 75 mm tube), sec | 160 |
| " " @ 80°C (10 x 75 mm tube), sec | 1200 |
| Storage stability | |
| Uncatalyzed @ 25°C, mo | over 6 |
| Uncatalyzed @ 70°C, hr | over 48 |
| Catalyzed (1 1/2% benzoyl peroxide) @ 25°C, hr | over 48 |

CURED, UNFILLED VIBRIN X-1047*

| | |
|----------------------------------------|--------------|
| Specific gravity | 1.336 |
| Shrinkage during cure, % | 9.4 |
| Rockwell hardness | L-123, M-121 |
| Water absorption, 24 hr @ 25°C, % gain | +0.73 |

*Resin catalyzed with 1.5% benzoyl peroxide, and cured 1 hr. at 65° C plus 3 hr at 110° C.



**Very low reactivity lends
high antioxidant value
to versatile agent . . .**

processors of rubber, petroleum oils and waxes, gasolines, coatings, plastics should find it of value

Uses: Effective antioxidant for organic materials such as rubber, mineral oils, animal and vegetable oils and fats, paints, and other hydrocarbon systems.

Features: Due to the presence of the tertiary-butyl groups adjacent to the phenolic hydroxide group, reactivity of the antioxidant is decreased to such an extent that it is not soluble in alkali of any strength and gives no indication of a hydroxyl group when subjected to the usual qualitative tests. It does not react with acids, aldehydes, glycols, or ethers under normal conditions, and is unusually stable when exposed to light, heat, and air.

Description: Ionol (2,6-di-tert-butyl 4-methyl phenol) is a tri-substituted, sterically hindered phenol. It is a relatively colorless crystalline product insoluble in water but soluble in a variety of alcohols, hydrocarbons, ke-

CHEMICAL PROCESSING

tones, and oils. Maker's specifications are outlined below:

| | |
|-----------------------------------------------|------|
| Purity, %, min | 98 |
| Freezing Point, °C, min | 68.5 |
| Color (0.3% solution in 99% IPA) Saybolt, min | 20 |
| Solubility, % completely soluble in white oil | 0.5 |

Rubber: Reported to be a good non-staining, non-discoloring antioxidant for light colored, natural and synthetic rubber formulations. In accelerated aging tests the tensile strength and other physical characteristics were best preserved by the addition of 1½ to 2 parts per hundred of Ionol, based on the amount of rubber present. Effect upon cure rate and stiffening of cured stock are reported negligible. Results when used in presence of copper are good.

Petroleum oils and waxes: Incorporation of less than 1% Ionol in lubricating, hydraulic, transformer, and turbine oils promotes stability at moderate temperatures. Induction of a typical hydrocarbon oil was increased from 0 to 180 hours at 120°C by the addition of 0.2% by weight of this antioxidant. Oil solubility of Ionol assures its remaining in solution.

Odor and color of a paraffin wax (melting point 138-140°F) containing 0.004% Ionol remained unchanged after 48 hours aeration with air at 220°F. A control in the same test appreciably lost its original properties after 24 hours.

Gasoline: Stabilization of various hydrocarbon constituents and impurities present in refined cracked motor fuels can be accomplished with Ionol. Here, the antioxidant is readily soluble, volatile at combustion temperatures, insensitive to metal catalysts, and to extraction by aqueous media. Stabilization of tetraethyl lead in highly refined aviation fuels during storage is an outstanding property of Ionol.

Anti-skinning agent: Found effective in retarding the skinning and/or gelation of oxidizing type surface coating vehicles while the finish is in the can. Tests reveal that concentrations of Ionol required here may vary from a few hundredths to 0.5%, depending on the vehicle. Drying rate is not interfered with, it is reported. Use in finishes suggests application in drying oil type printing inks.

Plastic materials: Small concentrations of Ionol are effective in preventing oxidation embrittlement of such plastics as polyethylene and substituted cellulose.

(Ionol is a product of the Shell Chemical Corporation, Dept. CP, 50 West 50th Street, New York 20, N. Y. . . . or for more information check CP 9023 on handy form, pages 2 and 3.)

35 grades of industrial laminates and their specifications

Mechanical, chemical, physical, thermal, and electrical properties are listed and tolerances are given for 35 of manufacturer's laminated plastic materials. Eight-page bulletin consists primarily of tables which are so arranged that the characteristics of a particular product can be traced from general properties through the results of laboratory tests — in order to help in selection of grades which apply to specific design problems.

Materials discussed here are those which have been treated or impregnated with one of three synthetic resin binders — phenolic, silicone and melamine. Bul CDL-38 is issued by Chemical Division, General Electric Co., Dept. CP, Pittsfield, Mass. When inquiring specify CP 9024 on handy form, pages 2 and 3.

FEBRUARY, 1952

NOW

Vinyl Acetate Copolymers in Water Emulsions

Custom-made to meet your requirements for—

- Heat-Seal Coatings
- Solvent-Reactivating Coatings
- Adhesive Formulations
- Grease-Proof Coatings
- Textile Finishing
- Binder for Paper, Fibers, Cork, Asbestos, etc.

Now, National can supply you with vinyl acetate **copolymers** in **water emulsions—made to your order**. National's specially developed processes for modifying vinyl acetate by copolymerization yield resin bases with many unique properties that can be tailored to your needs.

You can get water emulsions of these unusual copolymers now in commercial quantities—in a wide range of molecular weights, in concentrations ranging from low to unusually high solids content. They give adhesion to a wide range of difficult surfaces.

And the water emulsion form gives you certain advantages of economy and ease of handling. Since water is the vehicle, there is no problem of solvent odor, toxicity, or flammability. Emulsions can be thinned with water on the spot to the required solids content.

Applications mentioned above are just a few of the many potential uses for this versatile thermoplastic material. We'll be glad to give you technical assistance in developing the right base and the right formulation for **your** specific application.



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RESYN DIVISION, National Starch Products Inc.
270 Madison Avenue, New York 16, N. Y.

YES—We are interested in Vinyl Acetate Polymers and Copolymers in emulsion for _____ (application).

Please have one of your representatives call on us.

Name _____ Title _____

Company _____

Street Address _____

City _____ Zone _____ State _____

When inquiring check CP 9025 on handy form, pgs. 2-3

HERE'S WHY

you should look into

DU PONT "ELVANOL" Polyvinyl Alcohol

Flexible, High-Strength Water-Soluble Resin

WATER SOLUBLE—dissolves easily in hot or cold water, depending on the type and grade. No need for expensive organic solvents.

HIGH STRENGTH AND FLEXIBILITY—characteristics not often found in a water-soluble resin. Tensile strength and flexibility can be varied with plasticizers.

RESISTANCE TO GREASES AND COMMON ORGANIC SOLVENTS—impervious to air and many other gases

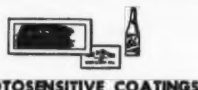
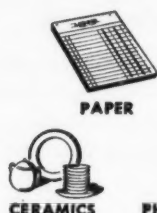
—useful characteristics for many applications.

SEVERAL GRADES OF "ELVANOL" are available, each with different physical properties, permitting a selection of the grade best suited to specific requirements.

MODIFICATIONS of its properties are possible with plasticizers, extenders, gelling agents, colors, flame-retardants, etc.

HERE ARE

a few of the industrial applications



HERE'S HOW

to get the whole story

SEND FOR THIS NEW 44-PAGE BOOK. IT TELLS YOU:

WHAT "Elvanol" is — physical and chemical properties, etc.

WHERE "Elvanol" may be used—industrial uses and applications.

HOW "Elvanol" can be modified for a particular application.

WHICH "Elvanol" grades are available for general or special uses.

For your **FREE** copy, just write to our nearest district office. Electrochemicals Department, E. I. du Pont de Nemours & Co. (Inc.), Wilmington 98, Delaware.

DISTRICT OFFICES: Baltimore, Boston, Charlotte, Chicago, Cincinnati, Cleveland, Detroit, El Monte, California, New York, Philadelphia, Pittsburgh, San Francisco.

DU PONT ELECTROCHEMICALS



BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

Tune In Du Pont "Cavalcade of America" Tuesday nights—NBC Coast to Coast

When inquiring check CP 9026 on handy form, pgs. 2-3

MATERIALS

White enamels formulated with modified resin have high gloss, fast curing . . .

also unusually good alkali resistance, color retention, and film uniformity

Uses: Resin for baking enamel formulations. Especially recommended for white enamels.

Features: Imparts high gloss, fast curing, excellent color retention and uniformity, and high soap, alkali, hot water, and humidity resistance to enamels.

Description: Uformite M-311 is a triazine-formaldehyde resin modified with a non-drying alkyd resin. It is compatible with short oil alkyds of the oxidizing and non-oxidizing types generally used in white baking enamel formulations. It is also compatible in all proportions with other amine resins. Only limited compatibility is shown with medium oil alkyds, and incompatibility in long oil alkyd. Formulations are usually reduced with xylol, butanol, and high-boiling aromatic and ester solvents.

Sixty-degree gloss values (Photovolt) of 92-94 are readily obtained in white enamel with straight titanium dioxide. This is reported to be an appreciably higher gloss than can be obtained with either urea or melamine resin. Color and color retention are better than for urea resin (particularly at high bakes) and are comparable with melamine resin.

Curing speed is similar to melamine type resin. Storage stability of enamels is good; however viscosity increases if stored at high viscosities. When maximum resistance to salt spray, soap, alkali, grease, and other chemicals is required, proper baking of enamels is important. A bake of 30 minutes at 300°F appears to be best for developing maximum corrosion resistance.

Many formulations are possible with Uformite M-311. Modifications in film hardness, toughness, adhesion, and color retention can be attained by varying such factors as the amount and types of amine resins, type of alkyd, pigmentation, and application conditions.

UFORMITE M-311 RESIN

| | |
|------------------------------------------|-------|
| Solids, % | 50 |
| Xylol, % | 50 |
| Viscosity, as supplied | Q-T |
| Mineral thinner tolerance, cc/10 gm soln | 7-9 |
| Iso-octane tolerance, cc/10 gm soln | 5 |
| Color, Gardner | 3 max |
| Acid number, solids | 4-7 |
| Amine resin solids, % | 60 |
| Non-drying alkyd solids, % | 40 |
| Weight per gallon, lb | 7.8 |

(Product of the Rohm & Haas Company, Dept. CP, Washington Square, Philadelphia, Pa. . . or for more information check CP 9027 on handy form, pages 2 and 3.)

See new uses for plastics in plastigels . . .

putty-like material shapes easily by any means, sets hard at 350°F without sagging or shrinking

Plastigels that can be formulated with Bakelite Company's new Vinylite dispersion resins are reported to offer a plastic material that opens many new fields of application. Plastigels can be molded, calendered, embossed, stamped, and extruded. Applications include coating paper and cloth, dip-coating wire objects, and making floor tile, tubing, intricate fittings, etc.

Plastigels are relatively stiff, are quickly softened at room temperature by stirring or kneading, and formed

CHEMICAL PROCESSING

MATERIALS

by hand pressure, molds, or dies. After forming, they gradually stiffen again and become self-supporting. When baked at 350°F for 10-15 minutes they set hard without sagging, shrinking, or otherwise losing their formed shapes.

One of the most important advantages of Vinylite resin plastigels is that they can be handled with lighter weight equipment than can conventional molding and extrusion plastics. The relatively low fusion temperature is another advantage.

Plastigels are formulated from Vinylite dispersion resins, plasticizer, Bentone-34 additive, plus modifying and coloring agents. A putty-like material results when properly mixed.

(Vinylite resins and complete know-how in making Vinylite plastigels is available from Bakelite Company, Div. of Union Carbide and Carbon Corp., 122 East 42nd St., New York 17, N. Y. . . . or for more information check CP 9028 on handy form, pages 2 and 3.)

Herbicide more tolerant to cereal crops, better weed killer than 2,4-D

Uses: Active ingredient for hormone-type herbicidal formulations. Effective on a large number of broadleaf weeds.

Features: Reported to be more effective than 2,4-D for killing Canada thistle, white top, hoary cress, and certain species of the mustard family. In combination with 2,4,5-T and other herbicides it has shown satisfactory control of brush and small trees.

Also reported to be less injurious (more tolerant) than 2,4-D on various grasses, cereal crops, and legumes. Average yields of cereal crops such as flax, oats, wheat, barley, rye, and rice were higher when the sodium salt of the herbicide was used at rates from 1/8 to 1 lb/acre. Similar tolerance is indicated in legume crops such as perennial white clovers, alfalfa, and certain varieties of red clover.

Description: MCP is a light-tan colored, granular solid. Composition is approximately 60-65% 2-methyl-4-chlorophenoxyacetic acid and 30-35% related methyl-chlorophenoxyacetic acids.

Application may be either by dust or solution and should be made when weeds are young, in a vigorous stage of growth, or in pre-emergence stage. Spraying has proved more efficient than dusting. Being a hormone-type killer, care must be taken (as with 2,4-D) to prevent contamination of other crops and equipment with trace amounts.

Converting MCP to the sodium salt renders MCP readily soluble. Esterification is also possible. Concentrates consisting of 4 lb/gal (acid equivalent) are possible with the sodium, potassium, and amine salts. Slightly lower concentrations of the sodium salt may be required for low temperature stability. A diethanolamine concentrate containing 4 lb/gal MCP has a solution point of -11°C. Solution points of the salts are as follows:

| SALT | SOLUTION STRENGTH (Total Acid Equivalent) | | SOLUTION POINT, °C |
|-----------|----------------------------------------------|--------|-----------------------|
| | % MCP | Lb/Gal | |
| Sodium | 43 | 4 | 27-32 |
| Potassium | 55 | 5.5 | 27-32 |

(Product of the Monsanto Chemical Company, Dept. CP, St. Louis 4, Mo. . . . or for more information check CP 9029 on handy form, pages 2 and 3.)

FEBRUARY, 1952

ISOPROPYL ACETATE

ACETONE

ISOBUTYL ACETATE

ETHYL ACETATE

ISOBUTYL ALCOHOL

**EASTMAN
INDUSTRIAL CHEMICALS**

solvents

These products are stored in bulk in Chicago, Illinois and St. Louis, Missouri by DeMert & Dougherty, Incorporated; and in Akron and Cincinnati, Ohio by Anderson-Prichard Oil Corporation.

SALES REPRESENTATIVES: New York—10 E. 40 St.; Cleveland—Terminal Tower Bldg.; Chicago—360 N. Michigan Ave.; Houston—412 Main St. **West Coast: Wilson Meyer Co.**, San Francisco—333 Montgomery St.; Los Angeles—4800 District Blvd.; Portland—520 S. W. Sixth Ave.; Seattle—821 Second Ave.

TENNESSEE EASTMAN COMPANY Division of Eastman Kodak Company **KINGSPORT, TENNESSEE**

When inquiring check CP 9030 on handy form, pgs. 2-3



Don't know there's always a new frontier

And what he knew is characteristic of the chemical industry today. For instance, at Doe Run, Kentucky, on the Ohio, in the country Daniel Boone knew so well, Mathieson—for 60 years a leading producer of the nation's basic chemicals—now makes a pioneering contribution to the new field of petrochemistry. For the first time, cross-country pipelines are being employed to transport chemical raw materials from their source to the heart of industrial America.

Riding the natural gas pipeline from the Gulf area to the Ohio, ethane is converted at Doe Run to these important petrochemicals:

| | |
|--------------------|---------------------|
| Ethylene Glycol | Ethylene Oxide |
| Diethylene Glycol | Ethylene Dichloride |
| Triethylene Glycol | Dichloroethyl Ether |

At Doe Run, 40 miles south of Louisville, a 2,000-acre plant site affords the opportunity for the development of a new organic chemical center. If your production is dependent upon a reliable source of petrochemicals, it may be to your advantage to get in touch with us now. Mathieson Chemical Corporation, Baltimore 3, Maryland.

Mathieson
CHEMICALS

SERVING INDUSTRY, AGRICULTURE AND PUBLIC HEALTH

When inquiring check CP 9031 on handy form, pgs. 2-3

MATERIALS

Sodium sulfosuccinic acid esters are effective wetting agents . . .

offered for the first time in trial-lot quantities

Uses: Recommended for producing stable oil-in-water emulsions and for dispersing solids in organic or aqueous media. Useful in paints, insecticide wettable powders, and petroleum products.

Agents BO and TR have been found to be effective for forming printing ink and pigments dispersions, and other solid-in-oil dispersions.

Agent BO is good as a textile softener at low concentrations. Agent BPE is effective wetting agent in textile processing and may be suitable for increasing the absorbency of paper products.

Features: Offered for the first time in trial-lot quantities for experimental use.

Description: Three surface active agents are esters of sodium sulfosuccinic acid. They are homologs of bis(2-ethylhexyl) sodium sulfosuccinate, in which the 2-ethylhexyl group is replaced by higher molecular weight groups as follows:

Surface Active Agent BO — bis(2-butylloctyl) sodium sulfosuccinate

Surface Active Agent TR — bis(tridecyl) sodium sulfosuccinate

Surface Active Agent BPE — bis(2-p-tert-butylphenoxyethyl)sodium sulfosuccinate

All three have low solubility in water and high solubility in organic compounds.

(Products of the American Cyanamid Company, Dept. CP, 30 Rockefeller Plaza, New York 20, N.Y. . . . or for more information check CP 9032 on handy form, pages 2 and 3.)

Entrains air in concrete — makes it more workable, weather resistant . . .

vinsol resin solution renders concrete as much as 500% more resistant to weathering

Announced is a solution for entraining minute air bubbles in concrete. With a controlled amount of air, concrete is reported to be anywhere from 400 to 500% more resistant to weathering, abrasion, frost, and sea water action. Scaling of concrete caused by de-icing salts is considerably reduced.

In addition, concrete containing the solution flows into forms more freely and requires less spading, rodding, and vibration. Water does not rise to the top, nor does the aggregate tend to settle. Bleeding, shrinkage, and segregation are reduced.

Known as Buckeye Vinsol Resin Solution, the liquid contains 12½% vinsol resin. Where inter-ground air entrained cement is used in an average concrete (5 to 5½ sacks per yard), the use of approximately ½ ounce of the solution per bag of cement will generally produce the entrainment of 3 to 6% of air. Where gray cement is used, it is suggested that 2 to 2½ ounces of the solution be used per bag of cement.

(Product of the Davies-Young Soap Company, Dept. CP, Dayton, Ohio . . . or for more information check CP 9033 on handy form, pages 2 and 3.)

CHEMICAL PROCESSING

MATERIALS

Plastic called replacement for stainless, rubber in chemical service . . .

resists chemicals, has high strength and light weight

Uses: Finds application for chemical and waste disposal pipeline, valves and other pipe fittings, stacks, plating barrels, spray nozzles, plenum chambers, filters and strainers, wire insulation, fan housings, and electrical conduit. Reported to replace such critical materials as stainless steel and rubber in corrosive and oxidizing atmospheres where temperatures do not exceed 165°F.

Features: Withstands wear, resists practically all chemicals, and has high tensile strength, light weight, high-impact strength, and good abrasion resistance.

Description: Boltaron 6200 is a rigid non-plasticized polyvinyl chloride plastic (based on B. F. Goodrich Chemical Company's Geon-404 vinyl resin). It is offered in the form of molding compounds, sheets and rods, and completely fabricated parts and fittings. Boltaron 6200 has approximately 1/6 the weight of stainless steel and corrosion resistance is reported to far exceed that of stainless.

Boltaron 6200 plastic is made by Bolta Products Sales, Inc., Lawrence, Mass.

(Distributed by H. N. Hartwell & Son, Inc., Industrial Plastics Div., Dept. CP, Boston, Mass. . . . or for more information check CP 9034 on handy form, pages 2 and 3.)

Cemented seams are soft as foam rubber itself . . .

depression tack lost in few hours; no soapstone needed

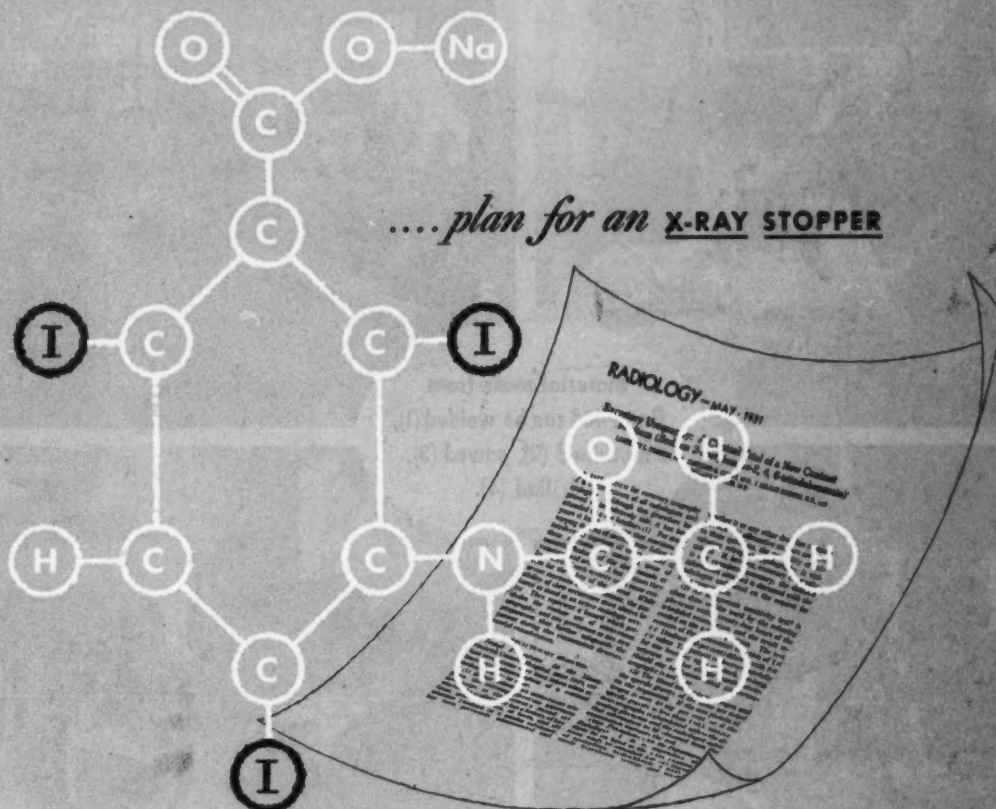
Uses: Adhesive for fabricating foam rubber. Suitable for cementing foam rubber (core or slab stock) to wood, fabric, leather, and leatherette.

Features: Cemented seams are as soft as the foam rubber itself. Loses depression tack in a few hours; no soapstone needed as an anti-tack agent.

Description: Softseam cement self-cures in 24 hours. It can be easily applied by brush or machine.

(Product of the Anchor Adhesives Corp., 36-23 164th St., Flushing, N. Y. . . . or for more information check CP 9035 on handy form, pages 2 and 3.)

For more information on product at right, specify CP 9036 . . . see information request blank between pages 2-3.



In the Mallinckrodt laboratories, skilled teams engage in continuous research to create specific new compounds—compounds to do everyday jobs *better* or to satisfy long-felt needs for the solution of *difficult* problems. An example is Urokon Sodium, which is opaque to x-rays. Injected intravenously, it is excreted by the kidneys, giving the diagnostician a clear picture of the urinary system on an x-ray film. The high opacity, low toxicity and great solubility of Urokon® Sodium were combined in one product after years of experimenting with various molecular arrangements of iodine in combination with other elements.

A deep respect for creative chemistry is shared by everyone in the Mallinckrodt organization. It is reflected in finer manufacturing processes and careful workmanship in the manufacture and development of fine chemicals not only to meet the precision standards of the medical profession but in the development of intermediates for industry as well.

MALLINCKRODT CHEMICAL WORKS • St. Louis • New York • Montreal

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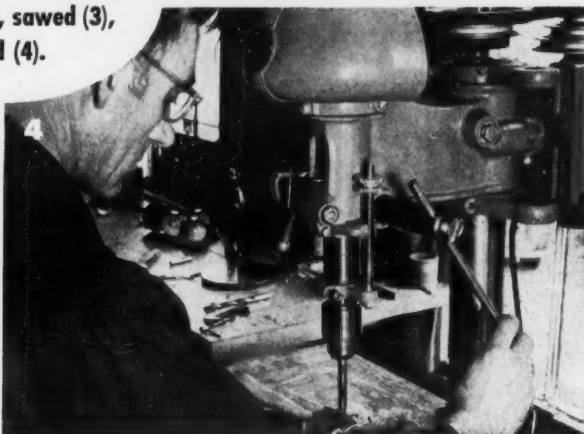
ORGANIC INTERMEDIATES • INORGANIC
CHEMICALS • CHEMICALS FOR ELECTRONIC
USES • METALLIC SOAPS • ANALYTICAL
REAGENTS • PHOTOGRAPHIC CHEMICALS

• MANUFACTURERS OF FINE CHEMICALS FOR INDUSTRY • SINCE 1867 •

B. F. Goodrich Chemical Company raw materials



Material made from Geon 404 can be welded (1), machined (2), sawed (3), drilled (4).



Rigid plastic developed for chemical industry needs

GEON RESIN 404 provides

- High impact strength
- High abrasion resistance
- Light weight
- Resistance to many chemicals

THE many advantages of Geon Resin 404 make it exceptionally useful to the chemical industry. It is a high molecular weight polyvinyl resin which is processed without plasti-

cizer, resulting in far better chemical resistance than that obtained with vinyls which use plasticizers.

This property makes it highly valuable in industries where extreme resistance to chemicals and corrosion is necessary—as in chemical processing, rayon, beverages, plating and food.

Material made from Geon 404 has more unusual advantages. Nails can be driven into it. Nuts and bolts made from it can be threaded. It can be sawed . . . drilled . . . machined on ordinary wood or steel working lathes. Its electrical properties are

superior to those of standard plasticized vinyl compounds. For complete information on Geon 404, please write Dept. GE 1, B. F. Goodrich Chemical Company, Rose Building, Cleveland 15, Ohio. Cable address: Goodchemco.



GEON RESINS • GOOD-RITE PLASTICIZERS . . . the ideal team to make products easier, better and more saleable.

GEON polyvinyl materials • HYCAR American rubber • GOOD-RITE chemicals and plasticizers • HARMON organic colors

When inquiring check CP 9037 on handy form, pgs. 2-3

MATERIALS

Brush-on, air-curing coating recommended for general maintenance . . .

neoprene-resin material no harder to apply than paint, is easier to repair, highly corrosion resistant

Uses: General-purpose maintenance coating. Applicable to all types of hard surfaced materials — metals, glass, wood, and concrete. Recommended for application where splash and fumes from corrosive agents are prevalent, where immersion in such agents is intermittent, and where abrasion is high. Not recommended for extended exposure to strong, hot caustic solutions (maker has another coating that he suggests for this use).

In tests, specimens with 4 dip coats have withstood 37% HCl, 10% HNO₃, NH₄OH, HAc, and H₂SO₄ service for several months without noticeable effect.

Features: Coating is an air-curing, 1-part system that is reported to be no more difficult to apply than paint. Surface preparation and application techniques are the same as for paint. No primer or accelerator is required. Inherent flexibility protects the applied film for shock, thermal expansion, and sharp blows. If it should be damaged, several coats over the area to get a continuous film will repair it.

Description: No. 362 Neoprene-Resin maintenance coating is a resin-modified neoprene base material. This combination is responsible for high adhesion and impermeability. Although the coating is ready to use, it can be adapted for very special uses by combinations of primer accelerators, and heat cure.

Application techniques are spraying, brushing, or dipping. Several coats are applied to gain a continuous protective film. Coverage runs about 320 square feet per gallon per mil.

Maker has complete application facilities and maintains a service to assist with maintenance coatings.

(No. 362 Neoprene-Resin coating is a product of the Carolina Chemical & Engineering Co., Dept. CP, PO Box 741, Wilmington, N. C. . . or for more information check CP 9038 on handy form, pages 2 and 3.)

Spray revitalizes stained, faded, dingy fabrics . . .

beautifies, colors, protects without giving fabrics 'painted look' and stiff surface

A solution to the problem of revitalizing dingy, faded, and stained fabric items has been found in a fabric spray. Fab-Spray is a fast-drying, plastic base mineral pigment spray that is said to beautify, color, and protect fabrics without giving the material a 'painted look' and stiff surface.

This spray is currently being used to rejuvenate fabrics of used cars, drapes, awnings, upholstery of all kinds, and items of woven wood, wallboard, etc.

Fab-Spray is available in a wide selection of colors that can be mixed to produce intermediate shades; white, clear, black, and chrome are also offered. No preparation of the fabric is necessary, other than wiping off loose dust. It covers water stains, grease spots, and fade streaks. It is said to injure no painted surfaces.

(Product of Henderize Inc., Dept. CP, 5667 Freeport Blvd., Sacramento, Calif. . . or for more information check CP 9039 on handy form, pages 2 and 3.)

CHEMICAL PROCESSING

MATERIALS

Tumbling compound combines abrasive, chemical cleaning . . .

media gives faster finish that is exceptionally bright

Uses: Wet-process tumbling compound for metal, plastics finishing.

Features: Media's chemical action combines good abrasive action for effective cleaning.

Description: Tumbling compound can be used in conventional tumbling equipment. It acts to suspend grease and cuttings in solution, thus keeping work surfaces and abrasive media free of accumulations that ordinarily prevent cleaning action.

Cleaning action is reported rapid, and finishes are brighter than those generally attained.

(Product of Tumb-I-Matic, Inc., Dept. CP, 4510 Bullard Ave., New York 70, N. Y. . . . or for more information check CP 9040 on handy form, pages 2 and 3.)

Announces improved stripping oil for metal coating . . .

eliminates thickening, smoke, odor common with other oils

Uses: Stripping oil for the hot-dip tin andterne plating industries.

Features: Tests show that the oil retains its original properties after 6 months' use. Increase in viscosity, smoke, and odor that result from decomposition of other stripping oils (palm oil for example) are eliminated.

Tin plate made with the oil has shown better enamel adhesion than when either palm oil or other fatty triglycerides were used.

Description: Stripping oil's stability is attained by mixing a highly saturated, normally solid hydrogenated fatty glyceride (iodine number not exceeding 60) with an ester obtained from a higher monohydric aliphatic alcohol and a higher fatty acid. Ester is varied from 10 to 35% depending upon the properties of the stripping oil for a specific operation.

(Product of the Archer-Daniels-Midland Company, Dept. CP, 2191 W. 110th St., Cleveland, Ohio . . . or for more information check CP 9041 on handy form, pages 2 and 3.)

For more information on product at right, specify CP 9042 . . . see information request blank between pages 2-3.

MEMO

TO R.L.

PRIMENE is the NEW NAME for Rohm & Haas alkylamines. The alkylamine acetate is called PRIMAC. Better take a look at them.

PRIMENE

Properties:

PRIMENE

Properties:

Principal Composition

Primene 81-T
12-15 carbon amine

$t\text{-C}_{12-15}\text{H}_{25-31}\text{NH}_2$

Boiling Range

5-95% at 225-271° C.
(760 mm.)

Specific Gravity

0.835 at 25° C.

Physical Character

Both amines are free-flowing liquids.

Solubility

Both amines soluble in paraffin hydrocarbons.

Also available: Primene 81-R and Primene JM-R, refined grades of these amines.

Primene JM-T

18-24 carbon amine

$t\text{-C}_{18-24}\text{H}_{37-49}\text{NH}_2$

5-70% at 133-191° C.
(15 mm.)

0.853 at 25° C.

Both amines soluble in paraffin hydrocarbons.

Also available: Primene 81-R and Primene JM-R, refined grades of these amines.

Suggested Uses:

These amines are suggested for evaluation as such, or as intermediates in any application where amines of this molecular weight range have been used.

This includes such fields as corrosion inhibitors, oil additives, surface active agents, bactericides, fungicides, textile finishing agents and many others.

Reactions:

Although there is some degree of steric hindrance, all of these amines have normal basic strength and readily undergo ionic reactions, such as salt formation. The lower molecular weight members undergo the normal reactions of primary, aliphatic amines. In addition, the t-alkyl structure imparts distinctive chemical properties, allowing the formation of stable aldimines by reaction with aldehydes. Substitution reactions can easily be controlled to give mono-substitution products.

AVAILABLE NOW IN COMMERCIAL QUANTITIES

PRIMAC

Properties:

| | |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Principal Composition | Primac JMA-T $t\text{-C}_{18-24}\text{H}_{37-49}\text{NH}_2\text{OOCCH}_3$ |
| pH | Slightly alkaline |
| Surface Tension | 1.0% aqueous solution 27.1 dynes/cm. 0.1% aqueous solution 33.4 dynes/cm. 0.01% aqueous solution 40.0 dynes/cm. 0.001% aqueous solution 52.6 dynes/cm. |
| Physical Character | Free-flowing syrup at room temperature. |
| Solubility | Soluble in water and in organic solvents, including paraffin hydrocarbons. |

Suggested Uses:

- (1) As a cationic surface active agent and emulsifier
- (2) As an oil soluble dispersing agent
- (3) As a cationic reagent in ore flotation
- (4) As a bactericide corrosion inhibitor in oil field flood waters (gives 99% kill at concentration of 8 p.p.m. against some flood water bacterial)
- (5) As an anti-static agent

Also available in this series.

t-Octyl amine

Boiling Point 137-142° C. (760 mm.)

CHEMICALS

FOR INDUSTRY

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COMPANY**

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Representatives in principal foreign countries

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FOR TECHNICAL LITERATURE AND SAMPLES

FURFURYL ALCOHOL—



ITS PROFITABLE PECULIARITIES

Furfuryl alcohol (FA*) is a primary alcohol but does not always act like one. Thus, esterification attempted by usual methods in the presence of acid catalysts leads to the formation of resins, not esters. Its peculiarities are in many cases the basis of its profitable use in industry.

FA resins, made by condensation of FA in the presence of acid catalysts, have exceptionally good corrosion resistance and are the basis for chemical resistant mortars, cements, reinforced linings and molded chemically inert equipment. FA resins are inert to alkali as well as acid attack, and are not affected by solvents.

In some solvent applications the peculiar behavior of FA is also a distinct advantage. Thus when used as a solvent for phenolic resin in the manufacture of abrasive wheels, FA actually condenses and becomes a part of the resin bond in the final product. Little FA is lost through volatility and a dense, hard wheel is produced.

When used as a solvent with urea resin adhesives, FA modifies and improves the characteristics with respect to crazing and flexibility.

Now is the time for you to investigate the profitable peculiarities of FA. Write on your letterhead for a copy of Technical Bulletin 83-B.

PROPERTIES OF FURFURYL ALCOHOL

| | |
|---------------------------------------|-------|
| Specific gravity, 20/20°C | 1.134 |
| Refractive index, n _D 20/D | 1.484 |
| Flash point (open cup), °C | 75.0 |
| Cloud point, °C | 21.0 |

*Reg. U. S. Pat. Off.



The Quaker Oats Company

336E The Merchandise Mart, Chicago 54, Illinois

Eastern Sales Office
Room 536E 120 Wall St., New York 5, N. Y.

In San Francisco, The Griffin Chemical Company • In Australia, Swift & Company, Pty. Ltd., Sydney • In Europe, Quaker Oats-Graanproducten N. V., Rotterdam, The Netherlands; Quaker Oats (France) S.A. 42, Rue Pasquier, Paris 8^e, France • In Japan, F. Kanematsu & Company, Ltd., Tokyo

When inquiring check CP 9043 on handy form, pgs. 2-3

MATERIALS

Bonds inorganic fibers, powders into heat-stable laminates . . .

silicone resin goes through interesting thickening-softening transitions during heating

Uses: Bonding material for producing rigid laminates from glass or asbestos cloth and mica. Also effective for bonding finely divided particles such as powdered metals, mica, silica, or carbon.

Being employed in combination with inorganic fabrics or fillers to produce heat-stable, Class H, electrical insulation materials.

Features: Laminates or molded parts possess high heat stability, very low water absorption, excellent dielectric properties over a wide frequency range, and are highly resistant to carbon tracking. Although these vary considerably depending upon the filler used, optimum values can be obtained by proper curing schedule.

Description: Silicone resin 2103 is a 60% solution of silicone resin in toluene. An organo-silicon polymer, it air-dries in about an hour at room temperature without the assistance of catalyst. The dried, tack-free resin has an initial melting point of about 70°C. Fully melted it is very fluid. As the temperature is gradually increased, it begins to gel. At about 150°C a condensation reaction sets in accompanied by bubbling of the resin. Bubbling diminishes at 185°C and thickening begins at about 240°C.

Further temperature increase turns the resin into a soft, non-flowing solid. Heating to 250°C or higher transforms the resin into a hard, infusible solid.

Addition of catalyst and fillers will change the times and temperatures required to reach these transition points. Following are specifications of the resin as supplied:

SILICONE RESIN 2103

| | |
|-------------------------|-----------------------------|
| Solids content, % | 60 ± 1 |
| Color | light straw |
| Specific gravity @ 25°C | 1.08-1.10 |
| Weight per gallon, lb | 9 |
| Viscosity @ 25°C, cp | 60-125 |
| Solvent | toluene |
| Thinners | toluene, petroleum naphthas |

(Product of the Dow Corning Corporation, Dept. CP, Midland, Mich. . . or for more information check CP 9044 on handy form, pages 2 and 3.)

No alkaline salts in cleaning compound to corrode metal . . .

especially adapted for cleaning electrical components because no residue remains to cause short circuits

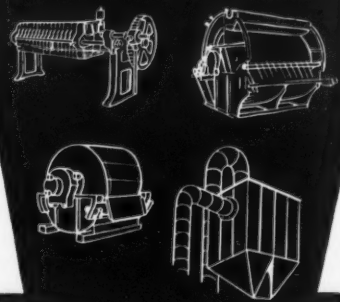
Uses: Recommended cleaner for use wherever steam or vapor cleaning equipment is already in service. Suitable for cleaning oily and greasy production parts and machinery.

Features: Contains no alkaline salts that present a corrosive hazard. Especially adapted for use in cleaning electrical equipment because no electrically conductive residue remains to cause short circuits. Will not clog steam cleaning equipment, maker reports. Generates no objectionable fumes.

Description: Magnus 72 non-alkaline steam cleaning compound is a liquid concentrate. Suggested mixture is 2 to 3 quarts of cleaner to about 50 gallons water.

(Product of the Magnus Chemical Company, Inc., Dept. CP, South Ave., Garwood N. J. . . or for more information check CP 9045 on handy form, pages 2 and 3.)

ON FOUR DIFFERENT FILTERS IN ONE PLANT



FEON Saves

. . . up to \$500 per year per filter! That's because FEON synthetic fabrics last from 10 to 12 times longer than the cotton cloths they've replaced in this pigment plant—and give better results, too. Here are the facts:

- 1. STRING DISCHARGE ROTARY FILTER:** FEON 208 Nylon lasts a year under severe chemical conditions, compared to six weeks for cotton. Saves \$500 a year.
- 2. SCRAPER DISCHARGE ROTARY FILTER:** Light-weight, efficient FEON 208 Nylon under less severe chemical conditions replaces heavy cotton. Saves \$150 a year.
- 3. FILTER PRESS:** FEON 164 DYNEL gives 900% longer life than cotton fabrics, saves \$2664 a year.
- 4. DUST COLLECTOR:** FEON fabrics now under test are far outlasting other materials, promise extensive savings.

Savings like these may be possible in your plant! Try FEON now—filter cloths that last from 3 to thirty times longer—one source of supply for all needs—24-hour service. Send us the facts and figures on your job today. We'll be glad to quote prices and make recommendations.

GET STARTED NOW!

NYLON
ORLON
VINYON-N
DYNEL

Send for new
FEON Selector Chart
containing samples,
technical data and
case histories.



FILTRATION FABRICS DIVISION FILTRATION ENGINEERS, Inc.

155 Oraton Street • Newark 4, N. J.

When inquiring check CP 9046 on handy form, pgs. 2-3

CHEMICAL PROCESSING

MATERIALS

20,000 tensile strength credited to latest plastic sheet . . .

recommended for structural uses
where corrosion is factor

Uses: Plastic sheet for structural applications. Recommended for stressed chemical equipment where high corrosion resistance is required.

Features: Tensile strength is 20,000 psi, compressive strength 24,000 psi, and impact is 18 ft-lb/in un-notched. Reported to be resistant to acids, salts, mild alkalis, and most organic solvents. Water absorption is merely 0.20%, suiting the sheet for outdoor and immersion uses.

Description: E1B is available in sheets 18 x 28", and in the following thicknesses: 1/16, 1/8, 3/16, 1/4, 3/8, and 1/2". Special thicknesses from 1/32 to 1". Electrical properties include dielectric strength of 325 v/mil, arc resistance of 120 sec, power factor of 4.7, and dielectric constant of 4.7. Specific gravity is 1.50.

(E1B sheet is a product of The Dynakon Corporation, Dept. CP, 5509 Hough Ave., Cleveland 3, Ohio . . . or for more information check CP 9047 on handy form, pages 2 & 3.)

High strength credited to glass-reinforced molding material . . .

offered in tacky and dry stocks
to facilitate application

Uses: Resin-impregnated glass mat, fabrics for low pressure molding.

Features: Molded parts possess high mechanical strength.

Description: Phenopreg LP-502 makes use of Fiberglas reinforcing material. Layup, assembly, and curing can be accomplished without any further processing. Dry and tacky formulations are offered in roll form. Dry stocks can be supplied as die-cut preforms ready for layup and molding.

Curing is accomplished at 290-325°F, at 15-75 psi for tacky stocks or 75-200 psi for dry materials, and for 4-30 min depending on molding conditions and thickness.

(Product of Fabricon Products, Inc., Plastics Div., Dept. CP, River Rouge, Mich. . . . or for more information check CP 9048 on handy form, pages 2 and 3.)

For more information on product at right, specify CP 9049 . . . see information request blank between pages 2-3.

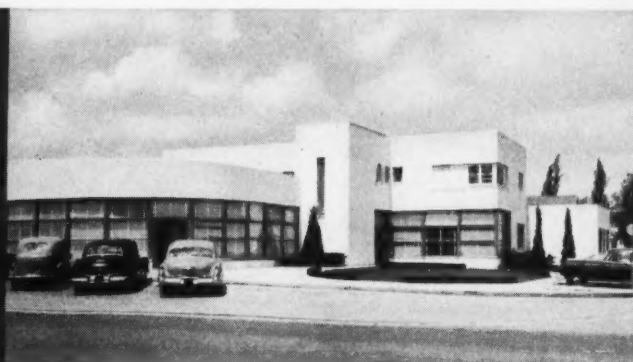
WITCO EXPANDS its research and technical service facilities

IN CHICAGO



Witco's Chicago research laboratory including new addition.

New carbon black research laboratory of Witco-Continental.



IN AMARILLO

In Chicago, Witco has completed a new addition to its research and technical service laboratory. Work in this new unit will be devoted to research on a variety of organic chemicals.

In Amarillo, Witco-Continental has opened the doors of its new carbon black research and technical service laboratory. This new unit will specialize in problems in the carbon black field.

In both cities and in both laboratories, experienced Witco researchers will strive to develop new and better products, as well as help you with any technical problems concerned with the use of Witco-made chemicals.

If you are in either vicinity, why not pay us a visit? We'd welcome the opportunity to take you on a sightseeing tour.

Metallic Stearates • Carbon Black • Paint Driers • Sunolite® (Anti-sunchecking Wax) • Asphaltic Products • Witcote® (Automobile Undercoating) • M.R. (Hard Hydrocarbon) • Stabilizers for Vinyl Resins Butyl Stearate • Fatty Acid Esters



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POSITIVE RESULTS

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specialty
chemicals are
designed and
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produce results.

As pioneers in chemistry for
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at all times — and without obli-
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include

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METALLIC STEARATES

PAINT INDUSTRY SPECIALTIES

ADVANCE SOLVENTS & CHEMICAL CORP.

245 FIFTH AVENUE, NEW YORK 16, N. Y.

MATERIALS

Welding electrode coatings unaffected by moisture with new binder . . .

aids in electrode manufacture,
helps user get good weld

Uses: Bonding material for low-
hydrogen welding electrode coatings.

Features: Till now, low-hydrogen
electrodes had to be handled *very* care-
fully to prevent moisture pick-up —
carefully by manufacturer and user
alike.

When the moisture was picked up,
the electrode became either unusable
or produced a poor, spattery weld.

This binder keeps the moisture out.

Description: Lithabond 83 is a
homogeneous glass prepared by smelt-
ing at relatively high temperature. It
is supplied as a dry powder. Particle
size: 100% through 60 mesh, 90%
minimum through 200 mesh. Color:
light purple.

Binder is said to simplify welding
electrode manufacture and, as indicat-
ed, definitely helps the user.

Compensations in the electrode coating
formulation must be made by virtue of
the chemical composition of Lithabond
83, its behavior is a coating constitu-
ent, and the high-temperature bake
which is needed.

Following extrusion, drying and bak-
ing may be accomplished in a single
step, or in two operations as follows:
1) dry at 250°F for 10 to 30 minutes
to remove mechanically held moisture;
2) bake at 1125-1180°F for 6 minutes
to fuse into a hard, insoluble, non-
hygroscopic bond.

(Product of the Foote Mineral Com-
pany, Dept. CP, 18 W. Chelton Ave.,
Philadelphia 44, Pa. . . or for more
information check CP 9050 on handy
form, pages 2 and 3.)

Carries much data on lab gases

Featured in 24-page, graphically illus-
trated bulletin along with manufac-
turer's line of laboratory gases and
equipment are "Basic Properties of All
Gases," "Principal Impurities of
Gases," "Standardized Valve Data,"
and "Revised Cylinder Terms."

Form 2086 is issued by Ohio Chemical
& Surgical Equipment Co., Dept. CP,
1400 E. Washington Ave., Madison,
Wis. When inquiring specify CP 9051
on handy form, pages 2 and 3.

For more information on prod-
uct at left, specify CP 9052
. . . see information request
blank between pages 2-3.

MATERIALS

Increases water solubility of many poorly soluble organics, inorganics . . .

surface active agent also greatly enhances effectiveness of water as fire extinguisher

Uses: Suggested for formulating soak-cleaners for metals, as a polymerization emulsifier for isoprene and chlorinated styrenes, for formulating phenolic and anionic disinfectants, as a solvent in various extraction and separation processes, as a leveling agent and penetrant in textile dyeing, and as a useful agent in numerous hydrotropic applications.

Features: Reported as a powerful solubilizing agent for organic materials otherwise having limited solubility in water, and also such inorganic materials as iodine. Following table is the comparative solubility of some organic liquids in water and in 30% Sorbit AC water solution:

| Solvent | Gm/100 cc water | Gm/100 cc Sorbit solution |
|----------------------|-----------------|---------------------------|
| Nitrobenzene | 0.19 | 12 |
| Carbon tetrachloride | .08 | 8 |
| Diethyl ether | 8.3 | 16 |
| Nitroethane | 4.5 | 15 |
| Ethyl acetate | 8.6 | 60 |
| Cyclohexanol | 3.6 | 40 |

Description: Sorbit is a sodium alkyl naphthalene sulfonate surface active agent. Two products with similar properties are offered:

| | Sorbit AC | Sorbit P |
|----------------------|-----------|----------|
| Form | paste | flake |
| Organic sulfonate, % | 65 | 65 |
| Sodium sulfate | 5 | 30 |
| Moisture | 30 | 5 |
| pH 1% solution | neutral | neutral |
| Wt/gal, lb | 8.5 | 2 to 3 |

Ready solubility is exhibited in water; such solutions are clear, straw to amber colored, and odorless when containing as much as 30% Sorbit active ingredient. It is soluble in moderate concentrations of acid (10% H_2SO_4), alkali (5% $NaOH$), and neutral electrolyte. Calcium and magnesium salts of Sorbit increase in solubility with temperature; heavy metal salts are fairly soluble at room temperature.

Another interesting use of Sorbit is in greatly increasing the effectiveness of water as a fire extinguishing agent. On wood fires, Sorbit AC at 1% concentration reduces water consumption and extinguishing time 65%. Afterglow is reduced and re-kindling prevented. No objectionable fumes are evolved, it is reported.

(Product of the Alrose Chemical Co., Dept. CP, Box 1294, Providence 1, R.I. . . . or for more information check CP 9053 on handy form, pages 2 and 3.)

Guide to selecting and using steels for plastic molds

Ring-bound booklet carries information of specific use to the plastics manufacturer and of general interest to any user of mold steels. Topics discussed include general consideration for buyers of plastic molds, description of mold steels, and tool steels for hobs and plastics. Tables give data on: hardness conversion, Fahrenheit-Centigrade conversion, weights of flat rolled steel per lineal foot, and weights of bar steel per lineal foot.

Much illustrative material is included. "Tooling Up For Plastics" is issued by The Carpenter Steel Co., Dept. CP, 112 West Bern St., Reading, Pa. When inquiring specify CP 9054 on handy form, pages 2 and 3.

FEBRUARY, 1952



ANTARA BRIGHTENER A NEW

Antara Brighteners make white fabrics whiter and many pastel shades

brighter by absorbing invisible ultra violet rays and emitting them as visible blue fluorescence. In this way the Antara

Brighteners eliminate the yellow cast and increase over-all surface reflectance.

For complete data on this superior light-fast optical whitening agent, kindly address Dept. CP-102



ANTARA® CHEMICALS

DIVISION OF

GENERAL DYESTUFF CORPORATION

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BRANCHES: Boston • Providence • Philadelphia • Charlotte, N.C. • Chicago • Portland, Ore. • San Francisco
IN CANADA: Chemical Developments of Canada Limited, Montreal • Irwin Dyestuff Corporation Limited, Montreal 1

When inquiring check CP 9055 on handy form, pgs. 2-3

**REMOVE
ALL
ACIDS**

Photomicrograph of
Nalcite SAR spheres.
Actual size 20
to 40 mesh.

WITH *Nalcite* SAR STRONGLY BASIC ANION EXCHANGE RESIN

REMOVAL of all acids, including carbonic and silicic, from water and process liquids is accomplished, without elaborate techniques or additional equipment, using Nalcite SAR strongly basic anion exchange resin.

Combining efficient anion removal and long resin life, Nalcite SAR offers new opportunities for short-cutting process techniques and assures purity of the effluent liquid.

Technical information on Nalcite SAR is contained in the bulletin described below. Bulletins on other high capacity Nalco ion exchange materials are available without obligation upon request.

TECHNICAL DATA ON *Nalcite* SAR

Complete data on Nalcite SAR properties, performance, and typical results. Includes charts, graphs, and sample calculations. 16 pages. Sent free upon request.

NATIONAL ALUMINATE CORPORATION
6294 West 66th Place • Chicago 38, Illinois
In Canada: Alchem Limited, Burlington, Ontario



When you use Nalcite resins, you take advantage of Nalco's long and broad experience in water and process technology.

MATERIALS

Acrylic rubbers demonstrate good low-temp flexibility, resistance to high temps . . .

can be processed on conventionally used rubber processing equipment

Uses: Acrylic rubbers are recommended for applications calling for flexibility at low temperatures, resistance to temperatures as high as 350°F, and resistance to oils, oxidation, ozone, sunlight, and boiling water. Finished articles find use as oil seals, water seals, coolant seals, O-rings, gaskets, packings, diaphragms, hose, belts, grommets, mats, protective covers, and white or pastel colored articles.

Features: Standard rubber equipment can be used for processing these acrylics.

Description: Acrylon BA-12 and Acrylon EA-5 are copolymers, each being composed of an acrylic ester and acrylonitrile. Similar products, known as Lactoprenes BN and EN, were pioneered by the Eastern Regional Research Laboratory of the USDA.

The uncompounded Acrylons are white, clear, thermoplastic elastomers available in compressed-bale form or in fibre board containers. Mooney Plasticity (ML-4, 212°F) of BA-12 is about 55, that of EA-5 is about 60. Due to their chemically saturated nature, they can be stored for long periods without deterioration from the aging effects of heat and oxidation. This, plus resistance to sunlight and ozone, suggests application in protective coatings.

Two of the best recipes for use in compounding the Acrylons with the proper balance of curatives are given below:

| INGREDIENT | PARTS BY WEIGHT | |
|-----------------------|-----------------|-----|
| Acrylon BA-12 | 100 | 100 |
| Acrylon EA-5 | — | — |
| Stearic acid | 1 | 1 |
| Sulfur | 1 | 1.5 |
| Triethylene tetramine | — | — |
| SRF black | 50 | 50 |

Following compounding procedure has been found to be satisfactory for these rubbers: Initial breakdown is not required because the polymers band readily on the compounding mill. Masterbatch technique, however, simplifies compounding and shortens the mixing schedule. Temperature of the Banbury is maintained at about 180°F and the weighed amount of raw rubber is placed in the mixer. Banbury is then run at slow speed for about 1/2 minute.

Carbon black and stearic acid (superficially blended) are then added to the mixer and milled about 2 minutes at low speed. Mixing is continued for an additional 3 minutes at high speed. Batch may stick to the mixer if the temperature rises too high; however, stock can be readily removed by cooling. Temperature of the batch is usually around 280-300°F upon removal from the Banbury mixer.

Batch is then dumped on the compounding rolls (maintained at about 150°F), milled two minutes, and the sulfur added. Milling is continued till dispersion is complete. Finally, triethylene tetramine is added — slowly to avoid the polymer from banding to both rolls. After complete dispersion of all ingredients, stock remains on the front roll. Stock is refined by closing rolls and then passing batch through about six times. Following sheeting out, stock is allowed to cool.

Stocks can be cured for 60 minutes at 298°F, also for 15 to 30 minutes at the same temperature, or as high as 350°F to substantially increase the curing rate without affecting the final properties.

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Magnolia Airco gases — oxygen, nitrogen, hydrogen, argon, helium, neon, krypton, xenon, and liquid oxygen, nitrogen and air — are known throughout the Southwest for their high purity, unvarying uniformity and dependable quality. This uniformity and adherence to specifications of Magnolia Airco gases, and rare gas mixtures, are definite factors contributing to their satisfactory use.

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For more information, write your nearest Magnolia Airco office.



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When inquiring check CP 9057
on handy form, pgs. 2-3

CHEMICAL PROCESSING

When inquiring check CP 9056 on handy form, pgs. 2-3

MATERIALS

Vulcanizates tend to adhere to the mold. This can be eliminated through the application of a mold lubricant, permitting ready release from the mold while hot.

Stocks prepared according to the foregoing recipes and cured for 60 minutes at 298°F have these specifications:

| PROPERTIES | ACRYLON BA-12 | ACRYLON EA-5 |
|-----------------------------------------------------|---------------|--------------|
| (Initial) | | |
| Tensile strength, psi | 1350 | 1420 |
| Ultimate elongation, % | 250 | 360 |
| Modulus @ 100% elongation, psi | 290 | 290 |
| Durometer hardness, 30 sec | 54 | 58 |
| Volume increase, %, 48 hr in water @ 212°F | 4.6 | 7.6 |
| Compression set, 70 hr @ 250°F (ASTM,B) | 63.3 | 68.8 |
| Compression set, same except tempered 24 hr @ 300°F | 29.7 | 27.1 |
| Brittle point °F (ASTM, D746-44T) | -25 | +21 |
| Brittle point, same except tempered 24 hr @ 300°F | -25 | +23 |
| (Aged 72 hr @ 350°F) | | |
| Tensile strength, psi | 1340 | 1530 |
| Ultimate elongation, % | 110 | 220 |
| Modulus @ 100% elongation, psi | 1180 | 610 |
| Durometer hardness, 30 sec | 72 | 70 |
| Volume increase, %, 48 hr in water @ 212°F | 7.8 | 12.3 |
| Brittle point, °F (ASTM, D746-44T) | -5 | +23 |

(Acrylon acrylic rubbers are developments of the American Monomer Corporation, Dept. CP, 511 Lancaster St., Leominster, Mass. . . . or for more information check CP 9058 on handy form, pages 2 and 3.)

Dithiophosphoric acid is reactive building block for organic syntheses . . .

acids obtained readily from their stable, nearly odorless potassium salt

Uses: Finds application as an intermediate in the preparation of insecticides, additives to lubricating oils, photographic developers, plasticizing agents, and wetting agents.

Features: A dithiophosphate-type insecticide (Malathion) has been recently announced that has 1/4 to 1/3 the insecticidal activity of Parathion, but is only 1/100 as toxic to mice.

Description: Potassium diisopropyl dithiophosphate is the stable, nearly odorless potassium salt of o,o-diisopropyl dithiophosphoric acid. The free acid, highly reactive, is readily released from its salt. Dithiophosphoric acids, in turn, undergo salt formation; hydrolysis; acid chloride, anhydride, polysulfide, amide, and ester formations; and Michael-type, Mannich-type, and aldehyde reactions.

Physical and chemical properties, potential applications, and toxicity are covered completely in maker's New Product Bulletin 22.

(Product of the American Cyanamid Company, Dept. CP, 30 Rockefeller Plaza, New York 20, N. Y. . . . or for more information check CP 9059 on handy form, pages 2 and 3.)

VICTOR

DEPENDABLE Source of Supply

for
**PHOSPHATES
FORMATES
OXALATES**



When looking for phosphates, formates, or oxalates you should consider this important fact. Victor is the only producer in the industry with 3 elemental phosphorus plants and 4 processing plants to serve you! This means that Victor's multiple sources of power, labor, raw materials, and transportation insure dependability of supply for you.

The Maas Chemical Company divi-

sion has served west coast industries since 1919. This division of Victor is recognized as a dependable source of supply for sodium phosphates, phosphoric acid, and Maas Photo-Pure chemicals.

Consider Victor's multiple plant facilities and nationwide service when selecting your source of supply. Remember Victor . . . and Maas, the dependable names in chemicals.



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NAME IN
CHEMICALS**

VICTOR CHEMICAL WORKS

141 West Jackson Boulevard, Chicago 4, Illinois

A. R. Maas Chemical Co., Division, 4570 Ardine St., South Gate, Calif.

When inquiring check CP 9060 on handy form, pgs. 2-3

MATERIALS

New polyester film looks better than Polythene, cellulose acetate . . .

in strength and electrical properties; probably won't be in commercial production till late '54

A new polyester film, similar in appearance to cellophane, with unusually good strength, heat resistance, electrical insulation, dimensional stability, low temperature flexibility, and chemical resistance has been developed by the Du Pont Company. Potential applications are foreseen in electrical insulation, film-base tapes, collapsible tubes, lightweight storm windows, and cases where cellophane is not suitable.

Mylar, as the film is called, is a condensation polymer obtained from ethylene glycol and terephthalic acid. It is similar to Dacron polyester fiber, with the exception that instead of being spun, it is cast in continuous sheets. Being produced only experimentally at present, Mylar will probably not reach extensive commercial production till late 1954 or early 1955. To highlight Mylar, the following comparison of properties is drawn:

| PROPERTY | Mylar | Polythene | Cellulose Acetate |
|----------------------------------|----------------------|--------------------|-------------------|
| Tensile strength, psi | 25,000 | 2400 | 11,000 |
| Break elongation, % | 130 | 700 | 20 |
| Tear strength, gm/mil | 22 | 175 | 4 |
| Bending modulus, psi | 500,000 | 19,000 | 350,000 |
| Softening point, °C | 240-245 | — | 60-110 |
| Moisture absorption, 100% RH, % | 0.3 | 0.005 | 9 |
| Sq in per lb/mil film | 20,000 | 30,000 | 25,000 |
| Impact strength, kg per cm/mil | 75 | 8 | 3 |
| Dielectric constant | 3.25 | 2.25 | 3.5-6.5 |
| Power factor, %, 60 cps/25°C | 0.3 | 0.05 | 3-6 |
| Dielectric strength, v/mil | 5000 | 4000 | 3000 |
| Volume resistivity, ohm-cm | 4×10^{15} | 4×10^{15} | 10^{10} |
| Surface resistivity, ohm-100% RH | 4.8×10^{11} | — | — |

CHEMICAL RESISTANCE OF MYLAR POLYESTER FILM

| | |
|--------------------------|------|
| Water | Good |
| Mineral acids | Good |
| Bases | Fair |
| Alcohols | Good |
| Ketones | Good |
| Esters | Good |
| Aromatic hydrocarbons | Good |
| Phenolics | Poor |
| Aliphatic hydrocarbons | Good |
| Chlorinated hydrocarbons | Fair |

(Summary of information submitted by E. I. du Pont de Nemours and Company (Inc.), Dept. CP, Wilmington 98, Del. . . or for more information check CP 9061 on handy form, pages 2 and 3.)

Tailoring emulsions, solutions of polyvinyl acetate for specific needs . . .

in adhesives, coatings, etc.; properties readily altered by adding plasticizers, solvents, other resins

Uses: Suggested applications include heat-seal and solvent-reactivating coatings; high gloss and other decorative coatings; adhesives for transparent sheetings, foils, varnished papers, and inked papers; protective coatings and primers requiring good adhesion; grease-proof and asphalt-proof coatings; high-solids emulsions and lacquers; binders for paper, fibers, cork, and asbestos; and sizes for paper and textiles.

MORE USES FOUND FOR QUATERNARIES

Since their introduction the Arquads (Armour's quaternary ammonium salts) have been used chiefly for their marked germicidal properties. Such applications as mold inhibition, garbage treatment, sanitizing detergents for floors, walls, dishes, etc., have been investigated. There are also many other fields of application not so well known where the Arquads are now being used, or where their use is being investigated. Before discussing applications, a brief survey of the Arquads themselves may be helpful.

A quaternary ammonium salt may be thought of as the organic counterpart of an ammonium salt. For example, if ammonium chloride (NH_4Cl) has all its hydrogen atoms replaced by organic groups, it becomes a quaternary ammonium salt. All but two of the Arquads are alkyl trimethylammonium chlorides; the other two are dialkyl dimethylammonium chlorides. The alkyl quaternaries are water dispersible, while the dialkyls are soluble in most hydrocarbons and a variety of other organic solvents. All of the Arquads are compatible with cationic and non-ionic materials; they are not compatible with the anionics.

The Arquads are stable at both high and low pH's, as well as in the presence of most water soluble salts. They are not precipitated by hard water. The Arquads are surface active chemicals, and lower surface tension effectively; they may be considered as cationic wetting, foaming and emulsifying agents.

Sanitizing Detergent. Arquad S and Ethofat 242/25 (a non-ionic detergent concentrate) can be dry mixed with phosphate and soda ash to form a sanitizing detergent, combining the germicidal properties of Arquad S with the detergent properties of the Ethofat. In concentrations of 0.5—1.0% in water, this compound can be employed for cleaning food-handling equipment, hospital equipment, etc. A detailed technical bulletin is available covering this application.

Secondary oil recovery agents. Arquad 2C has proved a good protective agent in secondary oil recovery operations. More-

over, it is effective in extremely low concentrations. In this use Arquad 2C has a double function. It serves as a corrosion inhibitor, plating out as a thin film on metal in contact with corrosive waters. At the same time it is a powerful germicide, eliminating the danger of plugging the sand face with aerobic and anaerobic bacteria. Write for the new Technical Bulletin No. E-3 covering this application.



Textile softeners. Arquad 2HT is an excellent cationic softening agent for textiles. A small concentration in the final bath, either in the mill or in laundries, gives cloth a fine hand. Technical Bulletin No. E-1 gives complete details of this use.

Anti-static agents. Arquads eliminate the normal static electrical charges on plastics. A 1% Arquad solution in water, wiped onto the polystyrene plastic surface and allowed to dry, deposits a thin film and neutralizes the charge. This prevents the attraction of dust and lint.

Emulsifying agents. Because of their dispersibility in water and their solubility in oils, Arquad 2C and Arquad 2HT (the two dialkyl dimethylammonium chlorides) are capable of emulsifying oils in water. Such emulsions are substantive to cloth, wood, pigments, etc., and the oil phase can be selectively plated out onto cloth, for instance, even in the presence of water.

These and other uses are detailed in a free booklet. Send the coupon for a copy.



Lasting emulsions are essential for air spray

CATIONIC AND NON-IONIC EMULSIFIERS FOR INSECTICIDES

Ethofats and Ethomids are excellent emulsifiers, and because they are non-ionic are not sensitive to water hardness. One of these, Ethofat 142/20 (hydroxy polyoxyethylene monoester of mixed fatty and rosin acids) is an oil soluble, water dispersible emulsifier for formulations using kerosene or xylol as a solvent. Chlordane can be emulsified with Ethofat 142/20 without dilution with a solvent.

Ethomeen S/12 and Ethomeen S/15 (hydroxy polyoxyethylene substituted soya amine) are mildly cationic emulsifiers, not sensitive to water hardness. A combination of these is an excellent emulsifier for 2,4-D isopropyl ester, even in very low percentages.

Arquad 2C is a strongly cationic oil soluble surface active agent which, when used in combination with non-ionic chemicals like Ethofat 142/20, is an effective emulsifier for many oils and solvents. Such combination emulsifiers are not sensitive to water hardness. And tests indicate that Ethofat 142/20 is the most suitable spreading agent for DDT-oil larviciding formulations. For further data on these and other Armour emulsifiers send for Technical Bulletin No. E-4.



For Your Bookshelf

Two charts of interest to you—**VISCOSITY COMPARISON CHART** which converts a known viscosity reading to any of the other 17 major viscosity scales is available. **INDUSTRIAL OILS SPECIFICATION CHART**, giving standards and characteristics of Armour's line of industrial oils. For free copies of these charts, send the coupon.



ARMOUR

Chemical Division

ARMOUR AND COMPANY, 1351 WEST 31ST STREET, CHICAGO 9, ILLINOIS

MYRISTIC ACID OFFERS MANY POSSIBILITIES IN PRODUCT DEVELOPMENT

Armour's patented fractional distillation process has provided many new raw materials which have led to the development of new and improved products. An outstanding example is Neo-Fat 13—a commercially pure myristic acid.

Myristic acid occurs naturally as the glyceride in various vegetable oils and fats. It is a hard, crystalline substance falling between lauric acid and palmitic acid in the saturated fatty acid series. Commercially, it is available over 90% pure, with lauric and palmitic traces.

Chemical and physical properties

| | Min. | Max. |
|------------------------|----------------|------------|
| Iodine Number | — | 2.0 |
| Acid Value | 243 | 249 |
| Titer, °C. | 48 | 52 |
| Color, Lovibond 5¼" | — | 1.0 R-10 Y |
| Unsaponifiable content | — | 0.5% |
| Moisture | — | 0.2% |
| Appearance | Characteristic | |
| Odor | Characteristic | |

Solubility. Neo-Fat 13 is practically insoluble in water, but is soluble in the following:

acetone, amyl acetate, benzol, butanol, carbon tetrachloride, ethanol, kerosene, turpentine, UM & P naphtha, and xylol.

Compatibility. Neo-Fat 13 (myristic acid) is compatible with soybean oil, petroleum pale oil, paraffin wax, linseed oil, gum rosin, ester gum, carnauba wax and beeswax, asphalt and alkyd resin (52R13).

Applications. The availability of Armour's high purity myristic acid provides a new raw material for the synthesis of organic compounds. Alcohols, nitriles, amines, esters and metallic soaps may be produced, with innumerable applications. Many references have been made in recent literature to the use of various Neo-Fat 13 or myristic acid derivatives in detergents, dyes, textiles, wetting agents, lubricating oils and greases, and other applications.

Specifically, monoglyceride derivatives may be used as emulsifiers in creams, lotions, brushless shaving compounds, wetting agents, cutting oils, leather treating, textiles, etc.

Neo-Fat 13 or its metallic soaps have been used in rubber compounding, syn-

thetic resins, cosmetics, paints, and in grease compounding.

The sodium or potassium soaps of Neo-Fat 13 have remarkable sudsing and wetting action without the skin irritating tendencies found in most free lathering soaps, such as those made from coconut or similar oils. This suggests its suitability for cosmetics, shampoos, shaving creams, etc.

Availability. Neo-Fat 13 is available in flake form, packed in 50-lb. bags and in aluminum tank cars. Send the coupon below for further information and prices.

NEO-FAT 11 HELPS FORM TOUGH, FLEXIBLE NON-YELLOWING ALKYDS



Lauric modified alkyds, as formed with Neo-Fat 11, go hand in hand with urea resins to form superior protective coatings. Their properties support one another, resulting in a clear, strong, hard and chemical-resistant film.

Because Neo-Fat 11 has less than 1% unsaturated fatty acid content, high-baked enamel produced with this chemical in resin formulations has a final film that is permanently tough and flexible. Such enamels will not take on a dingy, yellowed appearance. Appliances will stay white for years and years. Mail coupon for additional information and samples.

VERSATILITY EXPANDS USE OF NEO-FAT COCONUT OIL FATTY ACIDS

| | Iodine | | Acid Value | | Titer, C. | | Color, Lovibond 5¼" | | Caprylic | Capric | Caproic | Lauric | Myristic | Palmitic | Unsaturated Acids |
|----------------------------|--------|------|------------|------|-----------|------|---------------------|----------|----------|--------|---------|--------|----------|----------|-------------------|
| | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | | | | | | | |
| Neo-Fat 7 (caprylic acid) | — | 2.0 | 385 | 394 | — | 16° | — | 0.5R-5Y | 90 | 7 | 3 | | | | |
| Neo-Fat 9 (capric acid) | — | 2.0 | 323 | 329 | 28° | 33° | — | 1.5R-10Y | 3 | 90 | | 7 | | | |
| Neo-Fat 11 (lauric acid) | — | 2.0 | 276 | 282 | 36° | 42° | — | 1.0R-10Y | trace | | | 90 | 9 | | 1 |
| Neo-Fat 13 (myristic acid) | — | 2.0 | 243 | 249 | 48° | 52° | — | 1.0R-10Y | | | | 4 | 90 | 4 | 2 |

There's a good reason for the expanding interest in Armour's high purity capric, caprylic, lauric and myristic fatty acids... versatility.

These Neo-Fats are now giving excellent results in such diverse commercial applications as essences and disinfectants, anti-foaming agents and shampoos, pharmaceuticals and non-yellowing alkyds. See

the chart above for specifications. Begin your research today by mailing coupon for samples. For additional technical information, write to us explaining your particular problems.

Mail this coupon

Check the items you need, fill in name and address, and mail today

Send Literature: ☐ Arquad Booklet ☐ "Arquad S in Sanitizing Detergents" ☐ Neo-Fat 11 Booklet
☐ Bulletin E-1 ☐ Bulletin E-3 ☐ Bulletin E-4 ☐ Visc. comp. chart ☐ Indus. oils spec. chart
 Send Sample: ☐ Neo-Fat 13 (Myristic Acid) ☐ Neo-Fat 11 (Lauric Acid) ☐ Neo-Fat 9 (Capric Acid)
☐ Neo-Fat 7 (Caprylic Acid) ☐ Arquad 2C ☐ Arquad 2HT ☐ Arquad S ☐ Ethofat 142/20
☐ Ethomeen S/12 ☐ Ethomeen S/15.

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Fatty Acids

Long-Chain Fatty Acid Derivatives

Industrial Oils

When inquiring check CP 9062 on handy form, pgs. 2-3

FEBRUARY, 1952

MATERIALS

Features: Polyvinyl acetate is inherently an excellent adhesive for a great variety of surfaces. It is characterized by excellent film clarity and stability to heat and light. By proper addition of plasticizers, solvents, and resins, it is possible to extend its range of properties. Copolymerization of vinyl acetate with other monomers makes it possible to obtain unique basic resins.

Description: Polyvinyl acetate emulsions can be supplied with solids ranging from 45 to 60%. These are prepared by varying polymerization procedures — each procedure producing different properties. Result is a wide range of properties for many uses. Both polymers and copolymers of vinyl acetate are available in emulsion form.

Polyvinyl acetate solutions are normally supplied in ester or ketone solvents with high solids to assure the most economic handling. Various molecular weights are available as required. Polymerization has been carried out in the solvent, and there is no intermediate step in preparing the resin. This permits a substantial saving to the user. Other solvents may be employed in addition to those mentioned here.

Emulsions employ nonionic emulsifiers, permitting wide latitude in compounding. Some emulsions are compatible with borax. Maximum stability is obtained in the 4 to 6 pH range.

Solutions can be modified by including compatible materials such as nitrocellulose, rosin, some phenolics, ethyl cellulose,

PROPERTIES OF POLYVINYL ACETATE SOLUTIONS & EMULSIONS

| Solution | Approx. Solids, % | Solvent ** | Approx. Viscosity at 40°F | Solids, cp | Film Hardness* SRH ± 5 | Intrinsic** Viscosity | Advantages |
|----------|-------------------|---------------|---------------------------|------------|------------------------|-----------------------|------------------|
| 10L-05 | 50 | ethyl acetate | 10,000 | 45 | 0.7 | | toughness |
| 11L-06 | 60 | ethyl acetate | 2500 | 44 | 0.5 | | good adhesion |
| 13L-07 | 70 | acetone-MEK | 80 | 42 | 0.2 | | low viscosity |
| 10L-07 | 70 | acetone-MEK | 110 | 44 | 0.25 | | medium viscosity |
| 12L-07 | 70 | ethyl acetate | 280 | 5 | 0.4 | | plasticized |

*Film hardness by Sward Rocker Hardness, 70°F, on force-dried films cast at 1.5 mil and 40% solids.

**Intrinsic viscosity measured in acetone at 30°C.

***Practically all common organic solvents (except aliphatic hydrocarbons) can be used as thinning solvents.

| Emulsion | Approx. Solids, % | pH | Particle Size, μ | Solvent Tolerance | Freeze-thaw Stability | Advantages |
|----------|-------------------|-----|------------------|-------------------|-----------------------|---------------------|
| 11K-02 | 61 | 3-4 | 2-3 | fair | poor | high solids |
| 11K-22 | 57 | 5-6 | 1-3 | good | good | solvent tolerance |
| 10K-11 | 53 | 4-5 | 1-4 | poor | poor | compdg & toughness |
| 11K-01 | 45 | 4-5 | <1 | poor | good | good adhesion |
| 10K-01 | 55 | 5-6 | <1 | poor | poor | small particle size |

and chlorinated rubber. Materials which are incompatible include vinyl chloride-acetate copolymers, rubber, ester gum, polystyrene, and cellulose acetate.

Flexibility, gloss, tack, adhesion, and lower heat-sealing temperature can be extended through the addition of plasticizers. Suitable plasticizers are the lower phthalate esters, tricresyl phosphate, orthonitro biphenyl, and the glycolates. In many cases, emulsions and solutions can be furnished already formulated with specific solvents, plasticizers, resins, or other specific materials.

(National Adhesives Division of National Starch Products Inc., Dept. CP, 270 Madison Ave., New York 16, N.Y. ... or for more information check CP 9063 on handy form pages 2 and 3.)

3

WAY

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potash chemicals Caustic Potash—All Standard Grades • Carbonate of Potash—All Standard Grades • Potassium Chloride—Refined and Technical Grades • Potassium Sulfate



potash division

INTERNATIONAL MINERALS & CHEMICAL CORPORATION

General Offices: 20 North Wacker Drive, Chicago 6

When inquiring check CP 9064 on handy form, pgs. 2-3

MATERIALS

**Fifteen chemicals added
to line of manufacture . . .**

organic phosphate derivatives show many uses; some are available in commercial quantities

Victor Chemical Works, Chicago, Illinois, announces the addition of 15 new chemicals to its line. Following is a tabulation of suggested applications and availability:

| PRODUCT | APPLICATIONS | AVAILABILITY |
|---------------------------------------------------|------------------------------------------------------------------------------|--------------|
| Boron Phosphate | Ceramics, enameling compositions, acid resistant coatings | SC* |
| Borophosphoric Acid | Where solid, non-hygroscopic acid is needed | SC |
| Victawet 14 | Nonionic wetting agent | C** |
| Victawet 34-B (sodium salt of an alkyl phosphate) | Anionic type wetting agent | C |
| Di-iso-octyl Phenylphosphonate | Plasticizers, lubricants, hydraulic fluids | SC |
| Di-iso-octyl Styrylphosphonate | Plasticizers, lubricants, hydraulic fluids | SC |
| Di-n-propyl Thionochlorophosphate | Intermediate for organic synthesis | SC |
| Tri-n-propyl Phosphate | Plasticizers and solvents | SC |
| Dibutyl Phosphite | Solvents, reducing agents, intermediate in organic synthesis | SC |
| Diethyl Phosphite | Solvents, reducing agents, intermediate in organic synthesis | SC |
| Di-2-ethylhexyl Phosphite | Solvents, oil additives, intermediate in organic synthesis | SC |
| Potassium Tripolyphosphate | Dispersing, sequestering, detergent building | C |
| Tetrasodium Monopotassium Tripolyphosphate | Builder for soaps and detergents, deflocculating agent for water suspensions | C |
| Tetrasodium Dipotassium Tripolyphosphate | Detergent building, deflocculating, sequestering | C |
| Stabilizer (organic phosphate derivative) | Light stabilizer for vinyls | C |

*Semi-commercial quantities.

**Commercial quantities.

(Products of the Victor Chemical Works, Dept. CP, 141 W. Jackson Blvd., Chicago 4, Ill. . . or for more information check CP 9065 on handy form, pages 2 and 3.)

**Tabulates chemical resistance of
furan resin fittings**

Products described in bulletin—pipe and fume ducts—are manufactured of a furan resin material which is reinforced with chemical glass fabric. It is stated that the latter material, in addition to contributing tensile strength, also insures against shattering by physical and thermal shock. Tables in this two-color, four-page bulletin cover dimensions of available pipe and fittings (OD of pipe ranges from 2 1/4 to 13"), and resistance to chemical attack by over 75 common reagents and solvents.

Line drawings illustrate various of the fittings and connections. "Permanite Pipe and Fume Ducts" is issued by Maurice A. Knight Co., Dept. CP, Kelly Ave., Akron 9, Ohio. When inquiring specify CP 9066 on handy form, pages 2 and 3.

CHEMICAL PROCESSING

FLUOROFLEX-T* rod and sheet give you

TEFLON

at its best

FLUOROFLEX-T is "Teflon" processed under rigid control in new equipment expressly designed to bring out utmost inertness and stability in this material. Uniform in density and dimension, Fluoroflex-T sheets are exceptionally flat—easier to work with. Rods are free from internal strains, cracks, or porosity—easier to machine. Teflon withstands -90°F to +500°F. It is "self-lubricating." It's completely unaffected by virtually all chemicals. Which makes Fluoroflex-T the ideal packing, gasket or seal for processing equipment. Rods from 1/4" to 2" diameter; sheets 21" x 21" in 1/16" to 1 1/2" thickness. Ask us to quote on your needs. RESISTOFLEX CORPORATION, Belleville 9, N. J.

*Reg. trade name of Resistoflex Corp. for products manufactured from Teflon resin.

RESISTOFLEX

For out of the ordinary
engineering with synthetics

When inquiring check CP 9067 on handy form, pgs. 2-3

Can **CARBON DIOXIDE**
solve one of your
processing problems?

Each year industry is finding more applications for carbon dioxide. Some of these involve its use as an inert gas in processing paints, lacquers, resins, plastics, drugs and foods—it's the same gas that puts the "life" in soft drinks and is "death" to fires. Used in solid form ("DRY-ICE") carbon dioxide makes an ideal in-transit refrigerant as well as a cooling agent for shrink fitting and other industrial applications.

For the user of carbon dioxide, Pure Carbonic has developed the Carboflex CO₂ Supply System which insures a gas supply in any required quantity.

A handy directory listing the points that make up the nation-wide Pure Carbonic distribution network is available. If you would like a copy, or, if you desire the help of a Technical Sales Service man in the solution of a problem involving the use of carbon dioxide, please write to Dept. CP1859 at the address below.

PURE CARBONIC COMPANY

A Division of Air Reduction Company, Incorporated

GENERAL OFFICES: 60 EAST 42nd STREET, NEW YORK 17, N. Y.
Nation-wide CO₂ Service—Distributing Stations in Principal Cities

When inquiring check CP 9068 on handy form, pgs. 2-3

FEBRUARY, 1952

MATERIALS

**Primer for metals dries
in 30 minutes by
evaporation . . .**

leaves adherent corrosion inhibiting base coat; also conditions

Uses: Wash primer for most metals and alloys provides a corrosion inhibiting, adherent base coating, and at the same time acts as a metal conditioner. Can be used under practically all types of top coatings, but should not be used over phosphate treatment (actually replaces this treatment).

Features: Films form in about 30 minutes by the evaporation of solvent, eliminating the time needed for conventional primers to polymerize or oxidize.

Description: Vorac H-400 (based on Bakelite Vinylite resin) is supplied in 2 parts for mixing at the time of use. Primer is applied by dipping, brushing, or spraying—depending upon the article to be coated. Surfaces should be clean—degreased and sand blasted—and primer applied as soon after the cleaning operation as possible.

Meets US Specification MIL-P-15328.

(Product of The Vorac Company, Dept. CP, 162 East 38 St., New York, N. Y. . . . or for more information check CP 9069 on handy form, pages 2 and 3.)

**Complete run-down on
plastic products**

Multi-colored, 48-page catalog gives general background information on plastic production, and specifically, as related to thermoplastics. Materials which this particular manufacturer employs are characterized and applications outlined. Numerous colored photographs illustrate the wide and diverse line of manufacture. Among industrial products are tubing and fittings. Their properties are listed and working pressures tabulated and graphed.

On the last page of the catalog is a fold-in type chart (23 x 36") which presents a wealth of information and data on plastic materials. Over 40 different properties are given for some 60 compounds. Alongside this is a list of manufacturers which gives trade names for the various formulations reviewed in the table.

"Injection Molded and Extruded Plastics" is issued by Elmer E. Mills Corp., Dept. CP, 2930 N. Ashland Ave., Chicago 13, Ill. When inquiring specify CP 9070 on handy form, pages 2 and 3.

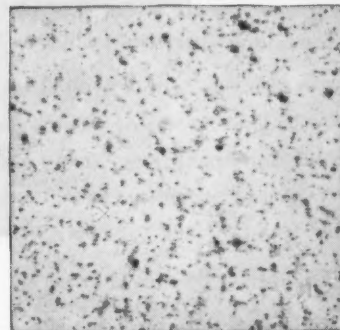
HERE'S PROOF OF THE COMPLETE EFFECTIVENESS OF MARASPERSE DISPERSANTS

Without
Marasperse



These photomicrographs* show vividly how Marasperse disperses insoluble particles in water and overcomes their natural tendency to flocculate.

With
Marasperse



(*Shown—Actual Photomicrographs of Carbon Black in Water—860 X)

This powerful dispersing action of Marasperse gives three important benefits.

1. The settling of insoluble particles in water suspension is prevented or greatly retarded.
2. The fluidity of slurries is markedly increased.
3. Slurries remain fluid even with greatly increased concentrations of solids.

If your process or the use of your products involves water suspensions of insoluble materials, investigate the use of Marasperse for increased process efficiency and superior product performance.

Marasperse is used in a wide variety of applications—in the dispersion of:

DYESTUFFS
INSECTICIDES
PIGMENTS
WAXES
ASPHALT
OIL WELL DRILLING MUDS
CARBON BLACK
STARCHES
GYPHUM
CLAYS
CEMENTS
RUBBER ANTIOXIDANTS
IN THE FORMULATION OF INDUSTRIAL CLEANERS

. . . and new uses are constantly being developed.



MARATHON CORPORATION

CHEMICAL DIVISION

218 N. MONROE ST. • ROTHSCILD, WISCONSIN

Write for information on MARASPERSE products. You will receive complete and technical data. Our research staff will welcome the opportunity to cooperate with you.



When inquiring check CP 9071 on handy form, pgs. 2-3

Jefferson

Diethylene Glycol

★ National defense requirements have created emergency demands for Jefferson chemicals. Our facilities are being expanded as rapidly as possible to cope with these requirements. We welcome your inquiries and will make every effort to serve you.

Excellent Quality for Many Uses . . .

tobacco humectant • manufacture of resins
manufacture of plasticizers • printing inks
dehydrating agent for natural gas • textile softener
dyestuff solvent

Available East and West in Convenient Lots . . .

from Port Neches, Texas, or Union, N. J.
in tank cars or 55 gallon drums. Please
address inquiries to Department D.



Please Return Those Empty Drums!

Because of an acute container shortage, we need our empty drums to continue giving you prompt delivery service.

Each Jefferson drum carries a large, easy-to-read return label. Simply write your company name on this label and the drum is ready for return *freight collect*. Thanks for your cooperation.

Jefferson Chemical Company, Inc.

711 FIFTH AVENUE, NEW YORK 22, N. Y.



ESSENTIAL CHEMICALS FROM HYDROCARBON SOURCES

ETHYLENE OXIDE
ETHYLENE GLYCOL
ETHYLENE DICHLORIDE
DIETHYLENE GLYCOL

Briefs

From recent literature

No. 4 in a Series

An insecticide suitable for control of chewing insects such as Mexican bean beetle larvae and sucking insects such as the pea aphid is prepared by reacting diethylene glycol with benzhydryl chloride and then with acetic anhydride to form diethylene glycol benzhydryl ether acetate.

Coating compositions for metals result when a modified unsaturated alkyd resin is mixed with about 3% methyl methacrylate or styrene and then polymerized. The alkyd resin is prepared by esterifying a mixture of rosin, maleic anhydride and linseed oil fatty acids with a mixture of diethylene glycol and glycerine. The coatings readily wet metal, dry remarkably fast, and are hard and flexible.

Hydraulic fluids having good lubricating properties which are useful over a wide temperature range are formed by dissolving di(diethylene glycol) glutarate in a solvent such as the methyl ether of diethylene glycol.

Polyvinyl chloride films plasticized with diethylene glycol di-*o*-benzoyl-benzoate have excellent toughness and strength. Using this plasticizer it is possible to deposit emulsions which will air dry to clear, continuous films.

These developments are abstracted from recent publications or U.S. patents. They may suggest applications of Jefferson Diethylene Glycol in your products or processes.

MATERIALS

Find practical shortstops for polymerizations . . .

tested in GR-S plants; combine reducing agent for removing peroxides with polymerization chain terminator

More powerful initiating systems, usually of the oxidation-reduction type, for low temperature polymerizations has made shortstopping of reactions more difficult. Present systems employ oil-soluble peroxides, a portion of which may be retained in the dried rubber. This residual peroxide has been suspected as a cause of the variable results observed in processing and aging these types of rubbers. These factors have prompted a search for more desirable shortstops.

An efficient polymerization shortstop, it is agreed, would have the following characteristics: 1) effective chain terminator, 2) ability to reduce completely all residual peroxides, 3) low cost, 4) non-staining and non-discoloring properties, 5) non-toxic for safe handling, 6) water-soluble for easy handling, 7) universally applicable in all standard recipes, and 8) no effects detrimental to stability or ease of processing.

To find any single compound which possesses *all* the qualifications of a good shortstop would be an exceedingly difficult task. A large number of possible materials have been tested in search for a practical industrial shortstop. Tests were aimed at finding a material that would combine a reducing agent capable of removing peroxides with a polymerization chain terminator.

It was found that the most effective combination tested was a mixture of sodium dimethyl dithiocarbamate and sodium polysulfide (Good-rite Shortstop 3955). Sodium dimethyl dithiocarbamate (Good-rite Shortstop 3954) has also been found to be a good polymerization shortstop when used alone.

A number of plant runs using these two shortstops have been made in several Government-owned GR-S plants. In all cases, they were found satisfactory and performed at least as well as anticipated from development experience.

| TEST | PROPOSED SPECIFICATION LIMITS FOR GOOD-RITE SHORTSTOPS | |
|-------------------------------------------------|-----------------------------------------------------------|-------------|
| | 3954 | 3955 |
| Total solids, % | 38-42 | 38-42 |
| Reducing power, (reducing no.) { % T.S. } | 7.0 min | 8.0 min |
| pH, diluted 1:9 with water | 10.8 min | 10.5 min |
| Nitrogen (solids), % | 8.6-9.4 | 3.3-3.8 |
| Specific gravity, 25°/25° | 1.120-1.210 | 1.270-1.300 |

(The Good-rites are products of the B. F. Goodrich Chemical Company, Dept. CP, Rose Bldg., 2060 E. Ninth St., Cleveland 15, Ohio . . . or for more information check CP 9073 on handy form, pages 2 and 3.)

Find wide application for surface active agent . . .

reverses normally negative surface charge, adds to normally positive charge on paper, textiles

Uses: Surface active agent that is expected to find wide application in the textile, paper, plastics, and surface coating fields.

Features: Characterized by good stability, detergency, rewetting action, antiseptic action, and surface tension lowering.

Description: Cationic surface active agent is a quaternary ammonium compound (50%) in an isopropanol-water mixture. It is offered to the textile industry as Deceresol

When inquiring check CP 9072 on handy form, pgs. 2-3

CHEMICAL PROCESSING

MATERIALS

SE, to the paper field as Paper Product 2000, and to others as Aerosol SE.

Vat-dye stripping: Has proved to be a highly efficient aid (0.25-1.0% used) in the stripping of vat-dyed rayon and cotton fabrics when reprocessing of these fabrics is required. Found particularly useful for the removal of vat dyes from rags to be used for making paper. Here, brightness of paper hand-sheets has been effected when as little as 0.2% of the agent was used in stripping mixed lots of vat-dyed prints, percales, and other rags. It has been found that metallized dyes may be stripped from wool by boiling $\frac{1}{2}$ -1 hr with 2-6% of the agent.

Dye assistant: Useful as a dye assistant in the application of metallized dyes to wool. When used in conjunction with a suitable nonionic surface active agent it is said to reduce scumming of the dye bath, increase color value, improve dye leveling, and reduce crocking. Levelness and penetration are promoted during final stages of process.

Rewetting agent: Good for both textiles and paper, especially helping rewetting of papers which have been treated with wet-strength resins.

Emulsifying agent: Good emulsifier for mineral oil, waxes, and alkyl resins in water, particularly when the emulsion is homogenized. Except for slight creaming and formation of a light water layer, such emulsions show good aging stability at room temperature for storage periods up to 1 yr. Use of hydrophilic colloid along with the agent does not appear to improve this stability. Has been used (10% on weight of water) successfully as an emulsifier during the polymerization stage in preparing thermoplastic resin emulsions.

Cationic detergent: Active detergent in acid media, in water of high hardness, and in high-concentration salt solutions. Effective scouring agent for wool and other textile fibers. Finds application in cleaning glassware and may be added to cationic germicides to increase sanitizing action. It has germicidal action itself, but is less potent than other conventional cationics.

Pigment dispersion and deflocculation: Useful for deflocculation of pigment press cakes, and as a pigment dispersant. When 0.2-1.0% is incorporated into finely divided clay mixtures, it produces wetting-out and deflocculation of the pigment upon suspension in water. Effective dispersant for iron oxide in water, but not for carbon blacks.

Modification of surface charge: Reverses the normally negative surface charge (producing a positive surface charge) when applied to cellulosic materials such as textiles, paper, etc. Such products thereby become substantive to anionic materials. Applied to textiles carrying a positive charge, it tends to increase the positive surface charge. In similar manner, application of a film of the agent from aqueous solution will impart a positive charge to glass or metal surfaces.

Has been found useful for settling out clay, silica, and other objectionable materials from aqueous suspensions.

Carbonizing assistant: Found stable in aluminum chloride and in sulfuric acid. Effectively wets out the wool cysts and burrs when used in concentrations from 0.04-0.2% in the carbonizing bath.

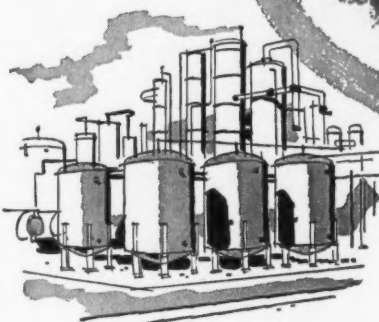
Mold lubricant: A thin coat of the agent applied to the mold will prevent urea-formaldehyde molding resins from adhering to the form.

(Aerosol SE surface active agent (and its counterparts) is a product of the American Cyanamid Company, Dept. CP, 30 Rockefeller Plaza, New York 20, N. Y. . . . or for more information check CP 9074 on handy form, pages 2 and 3.)

did you know...about **Carbide's**

POLYETHYLENE GLYCOLS

Versatility? Quality? Availability?



Carbide and Carbon's experience in the production of polyethylene glycols assures you that these products meet rigid quality controls and guaranteed high quality. These polyethylene glycols are available for immediate shipment in four closely controlled molecular weight ranges—200, 300, 400, and 600. Solid polyethylene glycols with molecular weights of 1000-6000 are marketed as CARBOWAX Compounds.

These water-white, non-volatile liquids are *truly* versatile chemicals. They are humectants, solvents, and lubricants and yet are completely soluble in water. These products are heat-stable, inert to many chemical agents, and do not hydrolyze or deteriorate on standing. They are powerful solvents for dyes, drugs, resins, proteins, and other difficultly soluble materials, and leave no residual odor in end products. The polyethylene glycols are much less volatile than glycerol and are 40 to 70 per cent as hygroscopic. Within that range you can get any humectancy you need. In addition, the two hydroxyl groups can be esterified with organic acids. The diesters of fatty acids form plasticizers with good low-temperature properties and the monoesters form excellent surface-active agents that are not affected by mild acids or hard water.

IT'S EASY to see how these polyethylene glycols can serve you. Try them in your manufacturing process wherever polyols such as glycerol are used. Just call or write our nearest office for trial samples and additional technical help.

COUNT THE WAYS THEY CAN HELP YOU AS...

Humectants

Lubricants

Solvents

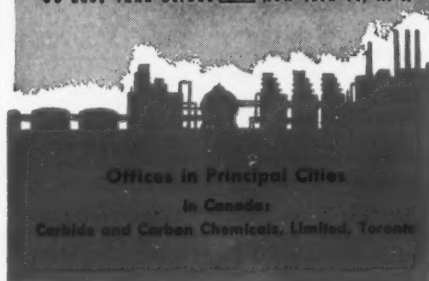
Couplers

Intermediates
for:

Non-Ionic Surface-Active Agents
Suspending Agents
Thickening Agents
Foam Stabilizers
Plasticizers

CARBIDE AND CARBON CHEMICALS COMPANY

A Division of
Union Carbide and Carbon Corporation
30 East 42nd Street **UCC** New York 17, N. Y.



Offices in Principal Cities

In Canada:

Carbide and Carbon Chemicals, Limited, Toronto

The term "Carbowax" is a registered trade-mark of Union Carbide and Carbon Corporation

When inquiring check CP 9075 on handy form, pgs. 2-3

MATERIALS

See wide application for boron nitride as refractory . . .

in induction furnaces, as mold wash in glass molding, coating for refractory supports, many more

Uses: Has been used successfully as a thermal insulator in high frequency induction furnaces because it is not heated by induction even when subjected to high temperatures. Consequently, it is a useful insulation medium for this type of furnace.

Has been used as a mold wash for glass molds in the manufacture of high tension insulators. For this type of service, its large surface and platy are advantageous. Also used as a coating for refractory supports used in automatic welding, as a bedding material for sintering boron, and as a constituent of ignitor tips.

Proposed applications are anticipated as a heat resistant lubricant in connection with silicones, a lining or lip coating for crucibles, and as a wash for forging dies.

Physical Properties: Boron nitride (BN) is currently available as a fine white to gray powder with a greasy feel. As prepared by this maker it crystallizes in hexa-

BORON NITRIDE REFRACTORY

| | |
|------------------------------------|----------------------------------------------------------|
| Color | White |
| Real density | 2.20 gm/ml (calculated from X-ray data) |
| Apparent density | 0.1 gm/ml or 6 lb/cu ft (depends on preparation methods) |
| Electrical resistivity | 1900 ohm-cm @ 2000°C (very high at all temperatures) |
| Melting point | 3000°C (approx) in nitrogen atmosphere under pressure |
| Equilibrium dissociation pressure* | 158 mm @ 2045°C |
| Thermal conductivity | Very low for powder due to low bulk density |

*Above this temperature BN should be kept in an atmosphere of nitrogen. However, it may be calcined at 2200° C under atmospheric pressure without serious loss.

gonal flakes about one micron in average diameter. Thin flat plates up to 20 microns in diameter are occasionally observed, and also rod-like crystals 0.5 micron in diameter and up to 20 microns long. Observations have shown that refractive indices above 1.74 with high birefringence, approximately 0.3. There is some evidence for polymorphism.

Chemical Properties: BN is highly refractory in neutral or reducing atmospheres. It reacts readily with air at red heat and is unstable in the presence of hot oxidizing agents such as carbon dioxide and water. Products of oxidation are nitrogen and boron oxide. By prolonged exposure to boiling water or acid solutions, it is hydrolyzed to ammonia and boric acids. The reaction, however, is very slow if the nitride has first been fired to 2000°C or higher.

It reacts with carbon at temperatures above 2000°C to form nitrogen and boron carbide. It seems to be completely inert to carbon monoxide, but is not recommended for high temperature service in other atmospheres containing free or combined oxygen. If BN could be formed into a monolithic body of low porosity, it should be at least as resistant to oxidation as is molded boron carbide.

Fabrication: The refractory has been fabricated into simple shapes by hydrostatic pressing in a flexible mold at pressures up to 100,000 pounds per square inch. Such shapes can be handled and are sufficiently strong for use as crucibles. Experience in firing at 2200°C in an atmosphere of carbon monoxide and nitrogen has been

MONSANTO
CHEMICALS—PLASTICS

FOR YOUR INFORMATION

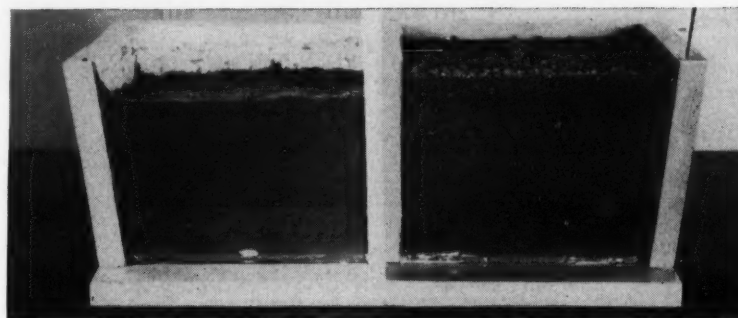
Every month Monsanto publishes these pages of pertinent information which may be useful to you. This issue discusses:

Soil Conditioner
Blond Finish Ingredient
Dyeing Assistant
Phenylacetic Acid and Derivatives

Plasticizer Extender
Softening Agent
Sulfonates No. 1
Metal Surface Protection

Additional information will be furnished on request.

MONSANTO'S NEW SOIL CONDITIONER GIVES WORN SOIL NEW LIFE



Here's a demonstration of the effectiveness of Monsanto's new soil conditioner. The sample at the left is untreated. Notice how the soil has become packed. In the section at the right, identical soil has been treated with Krilium. The treated soil remains crumbly and will maintain this condition indefinitely.

Extensive demonstrations of Monsanto Krilium* soil conditioner will be conducted in 1952. Two years of experimental applications indicate its possibilities in reviving worn land, making marginal farms profitable and increasing production of ground where poor soil structure causes low yields. In addition to its agricultural uses, Krilium may be used profitably by the ceramics and oil-well drilling industries.

Production of the soil conditioner in 1952 will be no more than enough to conduct the demonstrations which are planned for various parts of the country. It is expected to be available for general use by planting time in 1953.

The soil conditioner, a synthetic resin, contains no plant nutrients. It shows promise of making commercial fertilizers more readily available to plant growth. This is the result of improved soil structure through the use of the soil conditioner.

Krilium improves soil tilth, makes it more porous and easier to work. The ratio of improvement of soil structure with Krilium is on the order of one pound of the soil conditioner to between 100 and 1000 pounds of compost or other types of plant residues. The resin is quick-acting, giving observable results in 24 hours or less.

Improvement of poor soils is indicated, along with considerable increase in yields. Test plots show increases of 60% to 200%.

Increases result from better stands, faster germination, earlier maturity and greater plant structure.

Treated soils show less tendency to crust, making it easier for seedlings to break through. The treated soil being more porous allows more oxygen to reach the roots and allows roots to penetrate more deeply into the ground.

Treated soils retain 30% to 40% more moisture, thus helping crops through drought periods. Greater resistance to erosion is obtained through the application of Krilium to soil. Evaporation is retarded.

For information on the use of Krilium in agriculture, mail the coupon or contact the nearest Monsanto Sales Office.

Benzoic acid improves dyeing of new synthetic fibers

Mill runs on several of the newer synthetic fibers indicate that Monsanto Benzoic Acid makes possible thorough, all-the-way-through dyeing. Without benzoic acid, these new fibers could be dyed only on the surfaces.

The use of benzoic acid has a swelling effect on the new fibers. This permits the dye to penetrate, giving level, long-lasting color.



BENTHALL IMPROVES BLOND FURNITURE FINISHES

Because it gives paler original color and imparts excellent color retention, Monsanto Benthall* is being used to make better finishes for blond furniture. Benthall replaces up to 20% of the coconut fatty acids in these finishes.

In addition to its use in blond finishes, Benthall, a monobasic acid, is employed to improve many short-oil modified resins in these eight ways:

1. Reduced acid value.
2. Reduced viscosity.
3. Improved color.
4. Less yellowing on high-temperature baking.
5. Less after-bodying.
6. Better flow.
7. Better film adhesion of pentaerythritol types.
8. Greater flexibility of dried films.

Benthall does not retard air drying or baking. It may improve the dried films' resistance to water or chemicals.

DO YOU USE EMULSIFIERS?

Write for Monsanto Technical Bulletins P-123 and P-142 . . . They contain helpful information on formulating various insecticides, fungicides and herbicides.

Phenylacetic acid and derivatives worth investigating

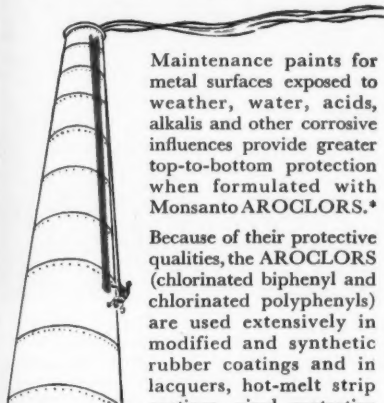
Monsanto produces phenylacetic acid and derivatives which have possibilities for the research chemist. These chemicals are believed to have many undiscovered uses. They have indicated uses as intermediates for pharmaceuticals (antispasmodics, sedatives, antiseptics, anticoagulants); for perfumes; for insect repellents.

Phenylacetic acid is a versatile aralkyl acid with a reactive methylene group.

Derivatives made by Monsanto include: Phenylacetoneitrile, phenylacetamide, beta-phenylethylamine, potassium phenylacetate, methyl-phenylacetate, N-ethanolphenylacetamide, N-methyl-phenylacetamide.

If you wish to conduct experiments with any of these chemicals, samples will be sent to you without obligation. Contact the nearest Monsanto Sales Office or mail the coupon for prompt response.

FOR METAL SURFACES top-to-bottom protection



Maintenance paints for metal surfaces exposed to weather, water, acids, alkalis and other corrosive influences provide greater top-to-bottom protection when formulated with Monsanto AROCLORS.*

Because of their protective qualities, the AROCLORS (chlorinated biphenyl and chlorinated polyphenyls) are used extensively in modified and synthetic rubber coatings and in lacquers, hot-melt strip coatings, vinyl protective coatings, maintenance

paints, fire-resistant coatings, wood-sealer formulations and marine paints.

For technical information, write Monsanto . . . Please state uses to which you wish to put the AROCLORS.

5 reasons for SANTOMERSE No. 1

To formulators of cleaning compounds, Santomerse* No. 1 offers numerous advantages in addition to its well-known effectiveness as an all-purpose detergent and wetting agent.

CONTROLLED DENSITY—Manufactured in three densities . . . gives you bulk to suit your products and markets.

COMPATIBILITY—Santomerse No. 1 is compatible with other detergents and builders.

EASY BLENDING—Available in flakes or granules, giving you a selection to blend readily with other ingredients without stratifying.

PROTECTED QUALITY—Santomerse No. 1 is shipped in wax-lined drums to protect quality in transit and storage.

PROMPT SERVICE—Santomerse No. 1 . . . warehoused in 13 cities, coast to coast . . . will be shipped promptly from a point near you.



LOOK INTO THIS

There's a new Monsanto high-molecular-weight alcohol ester—AE-1—that has definite use possibilities in industrial processing. Among its present and suggested applications, the following may be of interest to you:

Defoamer in producing ethyl alcohol from molasses . . . defoamer in producing glycerol from fats . . . foam control in the manufacture of yeast and other fermentations . . . elimination of foam in certain bottle-washing operations . . . solving foam problem in polystyrene latex water dispersions . . . lubricant for vinyls that are extruded or calendered . . . coplasticizer for rubber hydrochloride and chlorinated rubber.

For more information—also samples—contact Monsanto. Write for Technical Bulletin P-140.

PLASTICIZER HB-40 OK for vinyls

OK and available now in drum or carload lots, Monsanto HB-40 will help you lower your vinyl production costs without any sacrifice in quality. The price is 17¢ per pound in less than carloads—lower in larger quantities. A partially hydrogenated terphenyl, HB-40 is used as a coplasticizer, or as an extender for primary plasticizers in vinyl extrusions, vinyl pastes, vinyl slush moldings, vinyl calendering.

For full information on physical properties, application and use of HB-40, get Technical Bulletin P-104.

MONSANTO CHEMICAL COMPANY, 1700 S. Second Street, St. Louis 4, Missouri. District Sales Offices: Birmingham, Boston, Charlotte, Chicago, Cincinnati, Cleveland, Detroit, Los Angeles, New York, Philadelphia, Portland, Ore., San Francisco, Seattle. In Canada, Monsanto Canada Limited, Montreal.

*Reg. U. S. Pat. Off.



MATERIALS

that no actual sintering was obtained — resulting in no gain in strength or density on firing. The maximum density observed on a sample pressed at 100,000 pounds per square inch and fired at 2200°C was 1.6 grams per milliliter.

Presence of even a small amount of flux, such as boron oxide, can possibly greatly affect the sintering behavior. BN has not yet been successfully hot-pressed; however, crystal growth has been observed at 2500°C.

Purity of BN: Deficiency from 100% in analysis of BN is attributed to small proportions of oxygen (as boron oxide) and free carbon — 2 to 4%. Other possible contaminants are free boron and boron carbide. Spectrographic analysis shows traces of copper, iron, nickel, aluminum, magnesium, silicon, calcium, and manganese. These trace elements were found in amounts that might be expected in CP chemicals.

(Boron nitride is available from the Norton Company, Dept. CP, Worcester, Mass. . . or for more information check CP 9077 on handy form, pages 2 and 3.)

Solid form credited to insect repellent's effectiveness . . .

two substituted propanediols have value as plasticizer, lubricant, emulsifying intermediates

Uses: Undergo reactions characteristic of primary alcohols due to their two primary hydroxyl groups. They react with acids to form mono- and diesters that have potential value as plasticizers, synthetic lubricants, and emulsifying agents. Potential in the chemical and pharmaceutical intermediate fields is evident. 2-Ethyl-2-butyl propanediol-1,3 is effective as a repellent against certain biting insects. Here, it can be applied from aqueous emulsions (or formulated with other repellents) for impregnating fabrics.

Features: Effectiveness of 2-ethyl-2-butyl propanediol-1,3 as an insect repellent is due to its solid form and low vapor pressure, affording longer action as compared with conventional liquid repellents.

Description: Two diols (substituted propanediols) being offered are 2,2-Diethyl Propanediol-1,3 and previously mentioned 2-Ethyl-2-Butyl Propanediol-1,3. Both are white crystalline solids. Properties are outlined below:

| | 2-Ethyl-2-Butyl Propanediol-1,3 | 2,2-Diethyl Propanediol-1,3 |
|--------------------------------------|---------------------------------|-----------------------------|
| Molecular Weight | 160.25 | 132.20 |
| Apparent Specific Gravity 50/20°C | 0.931 | 0.949 |
| 61.3/20°C | | |
| Boiling Point, °C | | |
| 50 mm Hg | 178 | 125 |
| 10 mm Hg | 145 | 113 |
| 5 mm Hg | | 61.3 |
| Freezing Point, °C | 41.4 | |
| Absolute Viscosity, cps 40°C | 177.1 | 40 |
| 61.3°C | | |
| Solubility in Water, % by wt at 20°C | 0.8 | 25 |
| Density, gm/ml 61.3°C (liquid) | 0.929 | 0.949 |
| 50°C (liquid) | | |
| 20°C (solid) | | 1.052 |

(Products of Carbide and Carbon Chemicals Company, Division of Union Carbide and Carbon Corporation, Dept. CP, 30 East 42nd St., New York 17, N. Y. . . or for more information check CP 9078 on handy form, pages 2 and 3.)

SEND INFORMATION:

- ☐ Soil Conditioner. ☐ Santomerse No. 1.
☐ Metal Surface Protection.

SEND LITERATURE:

- ☐ Emulsifiers. ☐ Defoaming Agent.
☐ Plasticizer Extender (HB-40).

SEND SAMPLES:

- ☐ Phenylacetoneitrile. ☐ Phenylacetamide.
☐ beta-Phenylethylamine.
☐ Potassium Phenylacetate.
☐ Phenylacetic Acid. ☐ methyl-Phenylacetate.
☐ N-ethanolphenylacetamide.
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☐ Defoaming Agent AE-1. ☐ HB-40.

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Please send, without cost or obligation, information, samples or literature as indicated at the left.

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When inquiring check CP 9076 on handy form, pgs. 2-3



For ultimate in safety, control room is above and behind high-pressure test cells. Note use of sand bags to protect roof

Maintenance trucks go down access ramps to repair exposed piping along ceiling of underground tunnel system. The concrete ceilings of tunnels serve as sidewalks which connect all buildings. Steel overhead decking (background) protects walkers from sun and rain

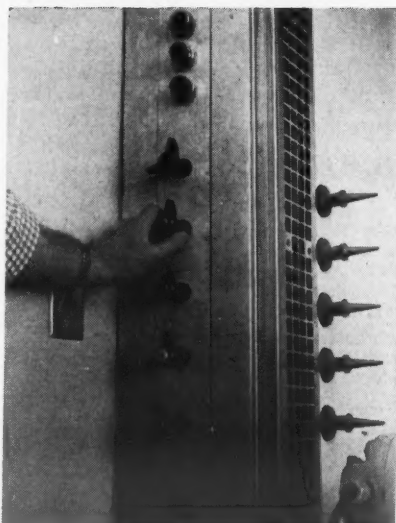


Union Oil's Petroleum Research Quarters Emphasize Safety and Convenience

Features include 2-level high-pressure lab for extra protection, and underground tunnels where all utility piping can be serviced from truck

SEVERAL interesting slants on modern laboratory construction are embodied in Union Oil Company's petroleum laboratory in Brea, Calif. The 14-building, 232,000 sq ft layout cost around \$8-million, is the main research headquarters of the company, and is completely self-contained. It includes three petroleum chemistry buildings, administration building, cafeteria and adjacent recreation rooms, complete technical library, six-cell high-pressure laboratory, engine and analytical unit, unit processing building, and power plant.

Laboratory buildings are 300' long and 48' wide. Offices are on one side of a corridor running down the length of each building, and laboratories on the other side. Roofs of the buildings slope to give 8' ceil-



ings along the office side, and 16' ceilings in the laboratories. Air conditioning units are concealed over the suspended ceiling of the corridor. Air flow direction for both heating and air conditioning is from lab office to lab, where fumes are exhausted via the two suction fans in each building. Labs have northern exposure. Direct rays are filtered out by 6' long louvers extending from roof.

Safety is designed into the six-cell high-pressure lab which is set apart from the other buildings. The cells

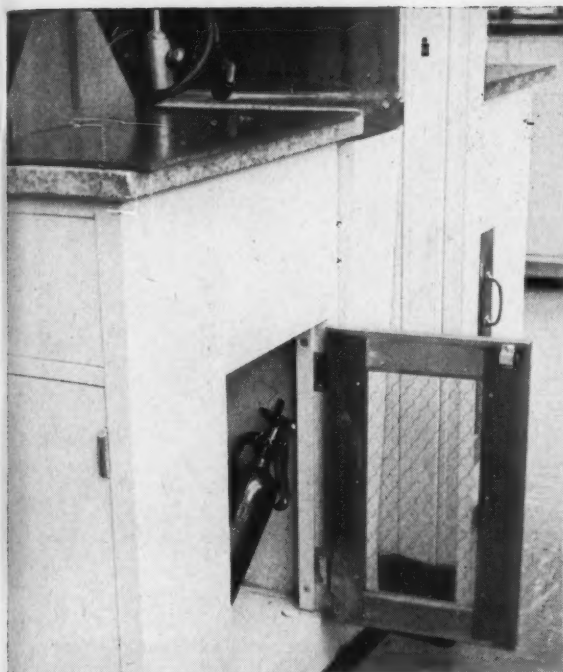
All valves on outlets at lab benches and fume hoods are color-coded and stenciled with name of gas or liquid being carried in the line



Laboratory walls, constructed of 3" thick Hausman steel partitions, are removable. Vertical post caps of these partitions are slotted every 6" of their height—are ready-made supports for shelving, lab structural set-ups, racks, etc.

are at ground level and surrounded on three sides and top and bottom by 18" of reinforced concrete; open sides face a dirt embankment. The control room, usually built directly behind test cells in high-pressure installations, is on the second floor, both behind and above the cells. Piping running from control room to cells makes two 90° turns between the two sections, minimizing the possibility of the piping being hurled into the control room in the event of an explosion in one of the cells.

A network of truck-width, 9' high, steel-reinforced concrete tunnels runs beneath the site. All utility piping—compressed air, steam, water, natural and other gases—is exposed, suspended from tunnel ceiling by brackets. When leaks or breaks occur, maintenance men drive a pickup or flat-bed truck into the tunnels via one of two access ramps. Work on the piping is done while standing on the truck bed; scaffolding and ladders are not used. Branch piping is taken off main lines through slots appearing every 10' along tunnel roof.



Glass-panel door at end of each laboratory bench holds CO₂ fire extinguisher

Safety showers in the laboratory buildings are of interesting construction. The shower heads are attached to flexible tubing instead of being rigidly attached to metal piping. This permits researcher to bathe affected area without drenching his whole body.

Particle size of wet or dry product from horizontal disc pulverizer can be closely controlled . . .

simple design of unit makes it easy to disassemble, assemble and clean

Simple in design, a horizontal disc pulverizer recently patented has been found quite successful in grinding a variety of materials, wet or dry, to meet particle size specifications closely. Degree of grind can be easily regulated by an adjusting ring which sets gap between rotor and stator discs.

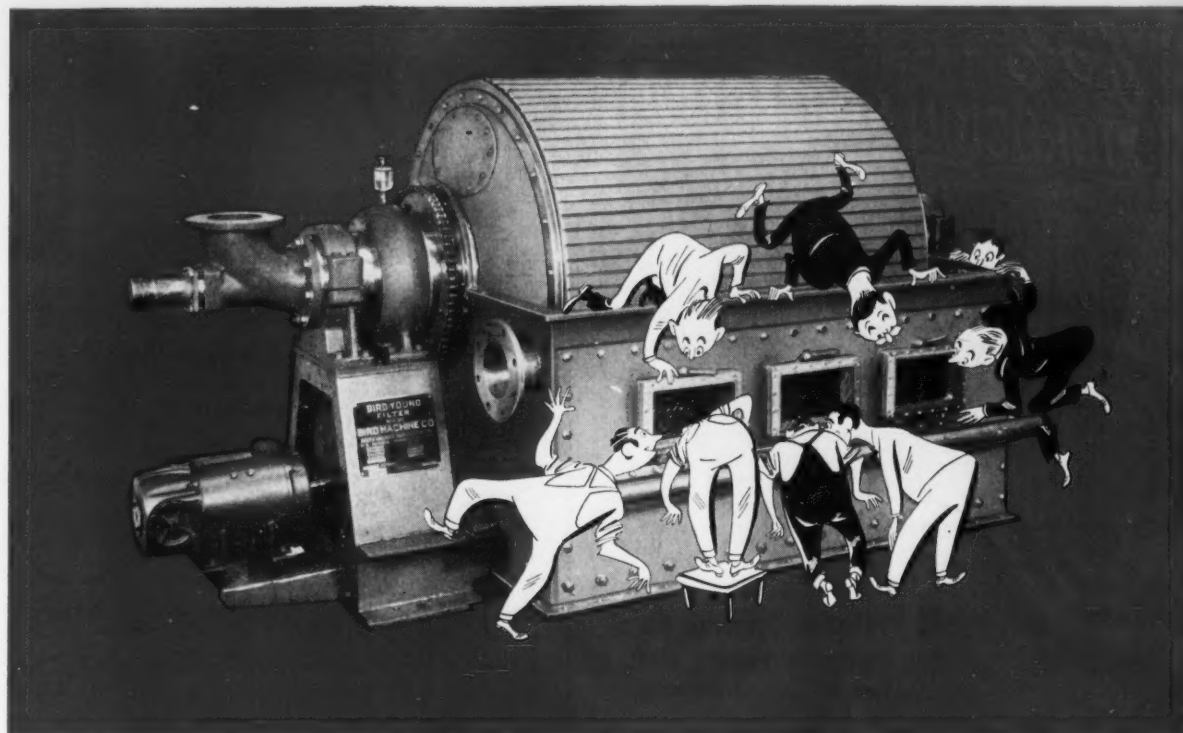
The mill has proved itself with such products as seeds, leaves, cork, charcoal, plastics compounds, cosmetics. It has also been used for dispersing, blending and grinding pigment colors and dyes. Various ingredients wet or dry, can be mixed and ground together in the mill to obtain a uniform and stable product.

Discs are designed to grind materials in successive steps, first by rough shearing to break up the material, then by finer shearing to cut the material to substantially uniform particles, and finally by grinding. Teeth on the rotating and on the stationary disc are set at such angles as to exert on the material a positive outward force as well as a centrifugal force, and to allow free flow to all areas of the discs. L-shaped turbine blades discharge the finished product through a chute on the housing.

The unit can be disassembled or assembled in less than a minute. Cleaning or sterilizing of parts is no problem. There are no hidden corners to clean.

(Patented by Julius Niethamer, 7-20 152 St., Whitestone, L. I., N. Y.)

FEBRUARY, 1952



YOU, TOO, HAD BETTER LOOK INTO THIS BIRD-YOUNG VACUUM FILTER

because it offers you these six big advantages over ordinary filters:

- 1 Better use of vacuum**—full vacuum exerted directly under the filter medium throughout the filtering-washing-dewatering cycle. No hindrances to fluid flow.
- 2 Effective separation of air from filtrate.** Air and liquid are kept separate, not mixed and then separated.
- 3 A completely clean filter medium.** Positive pneumatic "blow-back" discharges the cake and leaves the filter medium as clean as a whistle. No scrapers or doctors.

- 4 Effective thin cake discharge.** This means higher capacity and better washing.

- 5 Thorough, multi-stage, counter current washing** with sharp wash liquor separations when desired.

- 6 Easy, quick application of filter media.** Multi-panel filter drum construction. No wire winding or strapping. Long service from filter media.

Result: High production per square foot of filter area of well washed, thoroughly dewatered product.

WRITE FOR NEW BULLETIN

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When inquiring check CP 9079 on handy form, pgs. 2-3

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(Polyethylene)

AGILIDE

(Hard Polyvinyl Chloride)

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EXHAUST HOOD

LINED TANK



Pioneers in Plastic Welding

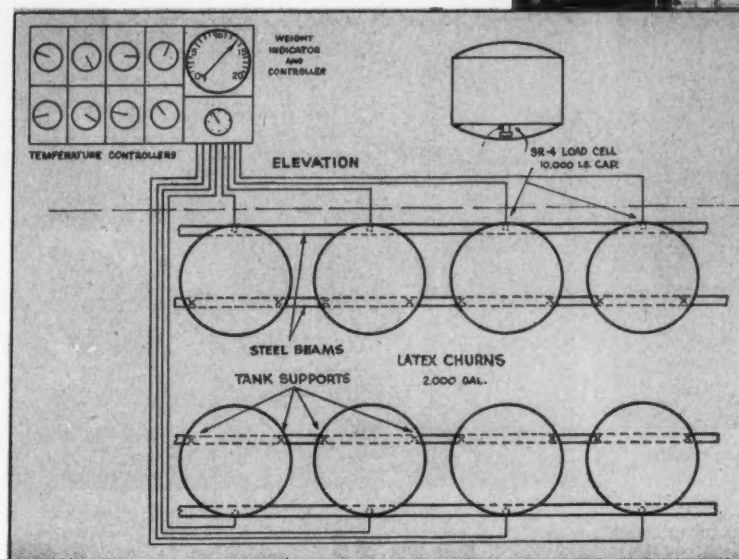
AMERICAN AGILE CORPORATION

Plant and General Offices

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Mailing Address, P. O. Box 168 • Bedford, Ohio

Ideas



View looking between rows of latex churns

Schematic layout shows beam and strain gage placement for control system



Strain gages in supporting members operate indicating-controller

Level Control on Eight Latex Churns Involves No Inside Connection

EIGHT, 2000-gal churns were designed for processing foam rubber materials at the Woonsocket, R. I. plant of United States Rubber Company. In order to accurately weigh latex and other materials into this process, the company installed a weight control system based on the use of SR-4 strain gages.

Placing the churns in two rows of four, engineers used two beams under each row. As shown in the accompanying schematic drawing, one beam in each case supports two-thirds of the churn's gross weight. The other (outside) beams support the remaining third of the weight through strain gages. One simple eight-point selecting switch, a controller-indicator and solenoid valves complete the weighing system.

The controller-indicator has a 20,000-lb scale, reading directly in weight of contents for each churn. One set point of the controller is 16,000 lb. When this is reached, the controller operates solenoid valves which shut off the fill line to the churns. As an additional safeguard, a high-limit alarm sounds if contents should exceed 17,500 lb. Likewise, when contents fall below 1000 lb another alarm indicates that the tank is nearly empty.

SR-4 strain gages are ideal for this application because of their accuracy and dependability. Actual element that was

used in this case, the Type C Load Cell, is only $3\frac{3}{8}$ " in diameter and less than 4" high. These cells have a capacity of 10,000 lb.

(Weighing system was built by Baldwin-Lima-Hamilton Corporation, Dept. CP, Philadelphia 42, Pa.)

Plant tests of plastic pipe prove successful . . .

Tenite II stands up well as lines for acetic acid mixtures, brine, pneumatic conveying

Tennessee Eastman has been testing the worth of their Tenite II (cellulose acetate butyrate) pipe in production processes. More than 1000' of $4\frac{1}{2}$ " OD, $\frac{1}{4}$ " wall, pipe have been tested in the following operations: 12-15% brine solution lines, water-slurry lines, 10-15% acetic acid-water solution lines, 28-35% acetic acid-water solution lines, wash water-cellulose acetate slurry, sight glass for water-acid mixture in wooden tank, city water lines at 70-90 psi, pneumatic conveyor lines, inert gas vent lines, and drain line for water.

Satisfactory service is reported in all cases, with no visible evidence of physical deterioration. A chemical analysis of

CHEMICAL PROCESSING

When inquiring check CP 9080 on handy form, pgs. 2-3

the pipe carrying the 28-35% acetic acid (with traces of sulfuric acid) indicated little or no attack on the pipe. The ester suffered little, if any, degradation in molecular weight. A thin layer on the interior appeared to be hydrolyzed to some extent. This pipe has been in service for



Tenite II clear extruded pipe used in 28-35% acetic acid recovery system. Pipe is transparent but appears opaque here because of slurry flowing in pipe

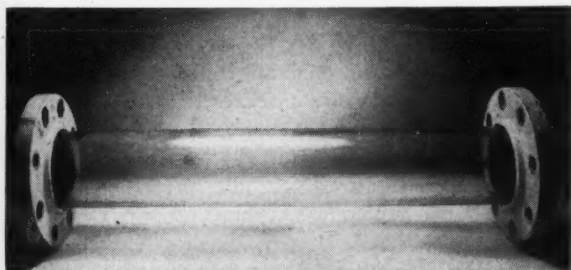
about 16 months, but the chemical analysis reported was done about 10 months ago.

The pipe has operated at a temperature of 70 to 110°F, flow of 550 gpm, and pressure to 10 psi.

Another line, carrying wash water-cellulose acetate slurry (0 to 1% acetic acid) at the same temperatures, has been operating successfully for about eight months. Flow has been about 200 gpm, pressure to 5 psi.

Transparency of the pipe is an important feature. Flow can be observed and points of clogging can be spotted. The line being used as a pneumatic conveyor, where visibility is almost a necessity, has been carrying acetate staple yarn at pressures to 12 psi for about 8 months.

Tenite II pipe is easily fabricated and installed. Most of the lines were connected by flanging the pipe over metal flanges (Van Stone flanges). Some lines, however,



After ten months of service, this is how the section shown above looked. After close physical measurements and examination, the section was put back in the line. Little, if any, change had taken place in the pipe

were installed using a bell and spigot type of joint. One end of the line was swaged so that the end of the next joint could be fitted into this bell and cemented. Cementing was done by applying butyl acetate and Tenite II cement to the inside of the swaged bell.

(More details are presented in "Tenite Pipe Installations in Tennessee Eastman Company Plant." This booklet can be obtained by writing to Tennessee Eastman Company, Division of Eastman Kodak Company, Dept. CP, Kingsport, Tenn.)

FEBRUARY, 1952



Teamwork in Pioneering Refractories for Higher Temperatures

The trend in industry is to higher and higher temperatures. In the range of 2800° F. to 3650° F., high-alumina refractories are meeting a wide range of service conditions at low over-all cost.

NORTON... Industry is constantly seeking the answers to high-temperature problems. To meet these temperature ranges, the Norton Company of Worcester, Massachusetts, is producing a line of super-refractories that will stand the gaff. For 36 years, Norton has been pioneering in the field of higher temperatures.

ALCOA... From Alcoa plants come the aluminas that team with Norton and other refractory manufacturers to produce the super-refractories that economically meet these increasing service demands.

ALCOA, too, has pioneered in this field, developing aluminas that give refractory brick and special shapes: Additional strength at high temperatures . . . lower coefficient of expansion . . . higher resistance to spalling and cracking . . . chemical inertness . . . negligible porosity and shrinkage.

ALCOA pioneering will always go forward in partnership with America's leading manufacturers of refractories . . . seeking the answers in terms of aluminas for tomorrow's refractory products. We'd like to help you with your high-temperature problems. Write to: ALUMINUM COMPANY OF AMERICA, CHEMICALS DIVISION, 606B Gulf Building, Pittsburgh 19, Pennsylvania.

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ACID FLUORIDE • FLUOBORIC ACID • CRYOLITE • GALLIUM

When inquiring check CP 9081 on handy form, pgs. 2-3

Foresee bright outlook for rubber in 1952 . . .

govt's decision to stop allocating synthetic general-purpose rubber important step to industry

The rubber industry's outlook for additional rubber supplies during 1952 is encouraging, according to John L. Collyer, president of The B. F. Goodrich Company. He estimates that from 1.2 to 1.3 million tons of natural and synthetic rubber will be consumed this coming year. About 65% of this, he said, will come from synthetic-rubber-producing plants. Even in the event of peak defense demand, he added, this country has enough natural and synthetic rubber to meet all essential needs for a 5-year period.

Mr. Collyer described the government's recent decision to stop allocating general-purpose synthetic rubber as an important step to American industry.

Reactivated Goodrich plants at Institute, W. Va., and Port Neches, Tex., are now producing far in excess of their rated capacity (90 and 60-thousand tons per year respectively). Company expansion in this country and abroad is making marked strides.

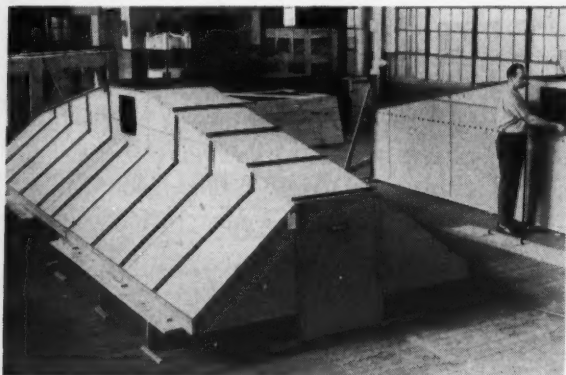
(Summary of information received from The B. F. Goodrich Company, Dept. CP, Akron, Ohio.)

All plastic assembly features corrosion-resistant duct system . . .

much cheaper than stainless steel and more durable than galvanized metal or wood

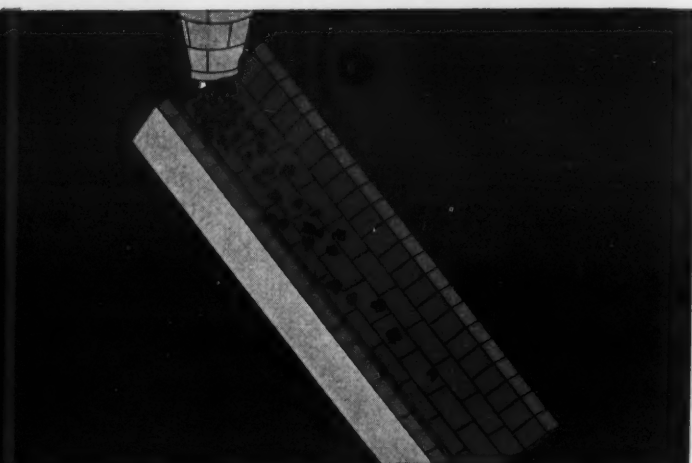
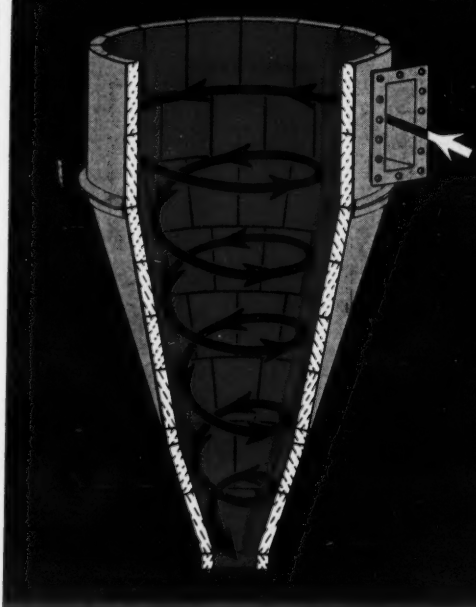
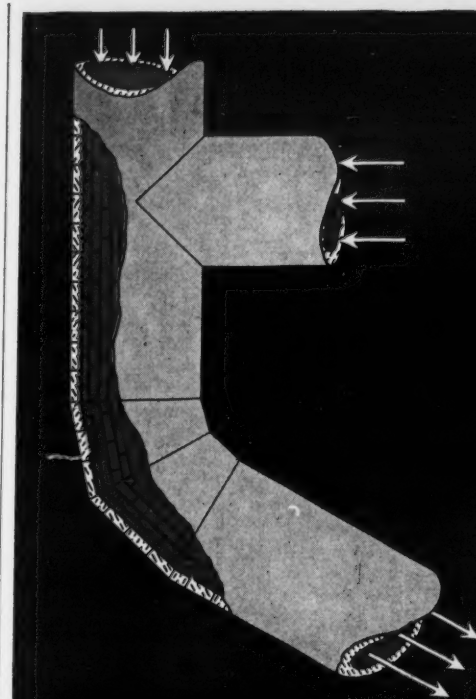
A blend of styrene plastic and acrylonitrile rubber is the major construction material of duct systems being manufactured by the United States Rubber Co. Combining dimensional stability, toughness and chemical resistance, the material is being used for tanks, liners, trays, hoppers, feeders, fume exhaust hoods, washers, stacks, and gutters.

No other material is used in construction. Reinforcing ribs, joints and corners are plastic extrusions. Sheets used to form the sides, tops and bottoms of the ducts are of the same material. Rivets are injection molded from the plastic while bolts are machined from extruded stock. Joints are solvent welded with the same plastic in solution.



Duct system is all plastic

Finished ducts are much cheaper than stainless steel and are more durable than galvanized metal or wood. Because of their relatively light weight, they are simpler to install than metal composition ducts. In addition, they offer excellent resistance to hydrochloric, hydrofluoric, phosphoric and sulfuric acids. They resist such chemicals as



ABRASION

Used under the toughest abrasion conditions known, our CARBOFRAX silicon carbide refractories or our MONOFRAX fused cast refractories have definitely outworn metals, paving bricks and other normally durable materials. For example:

In Cyclone Dust Collectors where the blast of millions of highly abrasive particles quickly cuts away other lining materials.

In Coke Chutes and Hoppers which must withstand punishing cascades of sharp-edged coke—sometimes fiery hot.

In Hot Blast Mains which carry high velocity gases that are laden with very abrasive dust.

In Billet Heating Furnaces where massive metal slabs are pushed or dragged across the furnace floor or other bearing surfaces.

Under conditions like these, regular lining materials or bearing surfaces are worn away in short order. Not so, these two Super Refractories. They last.

Granted, abrasion is seldom an isolated condition. It's usually abrasion *plus* . . . heat, or acid attack, or some other condition. But whatever the combination of conditions, chances are, there's a Super Refractory to fit the bill. For, as you can see (box, opposite page), these materials have many other properties equally as desirable in certain applications as abrasion resistance.

Super Refractories by

CARBORUNDUM

Trade Mark

Refractories Division

Perth Amboy, N. J.

"Carborundum", "Carbofrax" and "Monofrax" are registered trademarks which indicate manufacture by The Carborundum Company.

SUPER REFRACTORIES ARE ALSO USED

WHERE HEAT CONDUCTIVITY IS NEEDED. At elevated temperatures CARBOFRAX refractories conduct heat *almost as rapidly as chrome-nickel steels!* This characteristic is invaluable in checkers, muffles, hearths, radiant heating tubes, etc. It often radically increases the capacity of the equipment. There are also Super Refractories which are very good insulators, particularly at high heats.

WHERE CHEMICAL ACTION IS PRESENT. In general, all Super Refractories are either neutral or acid in nature. They are widely used where chemical inertness is important.

WHERE STRENGTH IS IMPORTANT. No commercial tonnage refractories have greater strength than Super Refractories. All can withstand over 300 psi at 2750° F without crushing. The modulus of rupture of one composition averages 3100 psi at 2460° F.

WHERE HIGH HEAT IS INVOLVED. They can be safely used at temperatures over 3000° F. They are very durable—are highly resistant to spalling and cracking. Some varieties are almost indispensable where flame impingement or violent temperature changes are present.

that will cut through metal hardly touches these materials

They're the toughest known materials for large scale commercial use—so tough, they'll quickly wear out the best grinding wheels.

Have you any spots in your equipment that are vulnerable to abrasion? Areas that need constant relining or replacing? Then don't fail to investigate our CARBOFRAX bricks and shapes, and our MONOFRAX K blocks. Both materials give "armor-plated" protection. Both are extremely hard—within one index point of diamond hardness!

Possessing properties seldom associated with refractories, these, and other Super Refractories by CARBORUNDUM, are often used regardless of whether high temperatures are involved. Great strength and durability plus high resistance to heat, cor-

rosion and abrasion, make them ideal for a wide range of applications.

It's surprising how often you'll find places in your equipment where Super Refractories are inherently better—and less expensive—than other materials. They're well worth investigating, particularly in this period of scarce critical materials.

Why not check up? Practically all Super Refractories are available as bricks or special shapes molded to close tolerances—including fitted joints, tubes, etc. Send today for our booklet describing the properties of these unique materials.



Information is now available on all the various groups of Super Refractories by CARBORUNDUM. Just send the coupon for our new booklet. No obligations, of course.

Dept. S-22
Refractories Div., The Carborundum Co.
Perth Amboy, New Jersey

Please send your free booklet describing the principal properties of Super Refractories.

Name _____

Position _____

Company _____

Street _____

City _____

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State _____

When inquiring check CP 9082 on handy form, pgs. 2-3

IDEAS

sodium hydroxide, potassium hydroxide, ammonium chloride, copper sulfate, ferric chloride, chlorine gas or solution, and oleic acid.

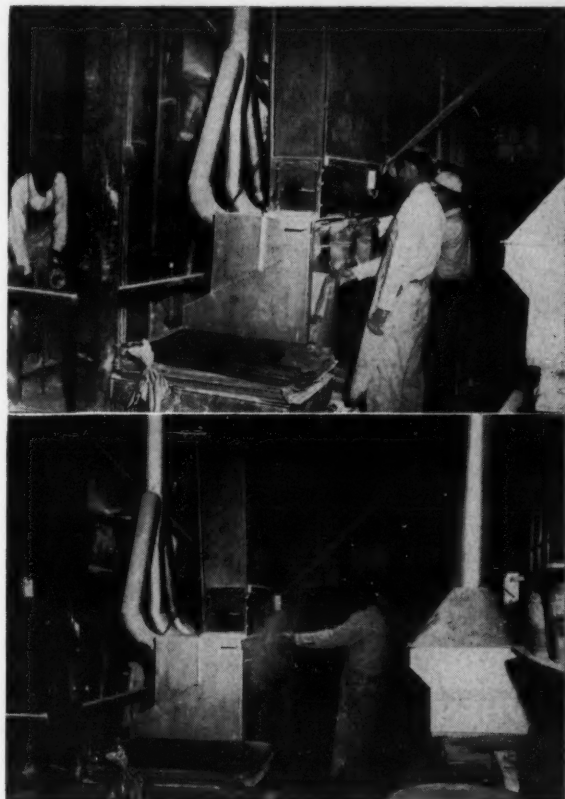
Ducts also have good resistance to aliphatic hydrocarbons but are not resistant to aromatic hydrocarbons, ketones, esters or chlorinated solvents.

("Uscolite" duct systems are manufactured by United States Rubber Co., Dept. CP, Rockefeller Center, New York 20, N. Y. . . . or for more information check CP 9083 on handy form, pages 2 and 3.)

Dust control at insecticide plant nets three advantages . . .

protects worker, keeps area cleaner, and recovers product otherwise lost

Dust control at mixing and bagging stations of Long Island Produce and Fertilizer Company's Riverhead, N. J., plant provides three major advantages: 1) protects workers from toxic insecticide dusts, 2) eliminates housekeeping problems created by settling dust, and 3)



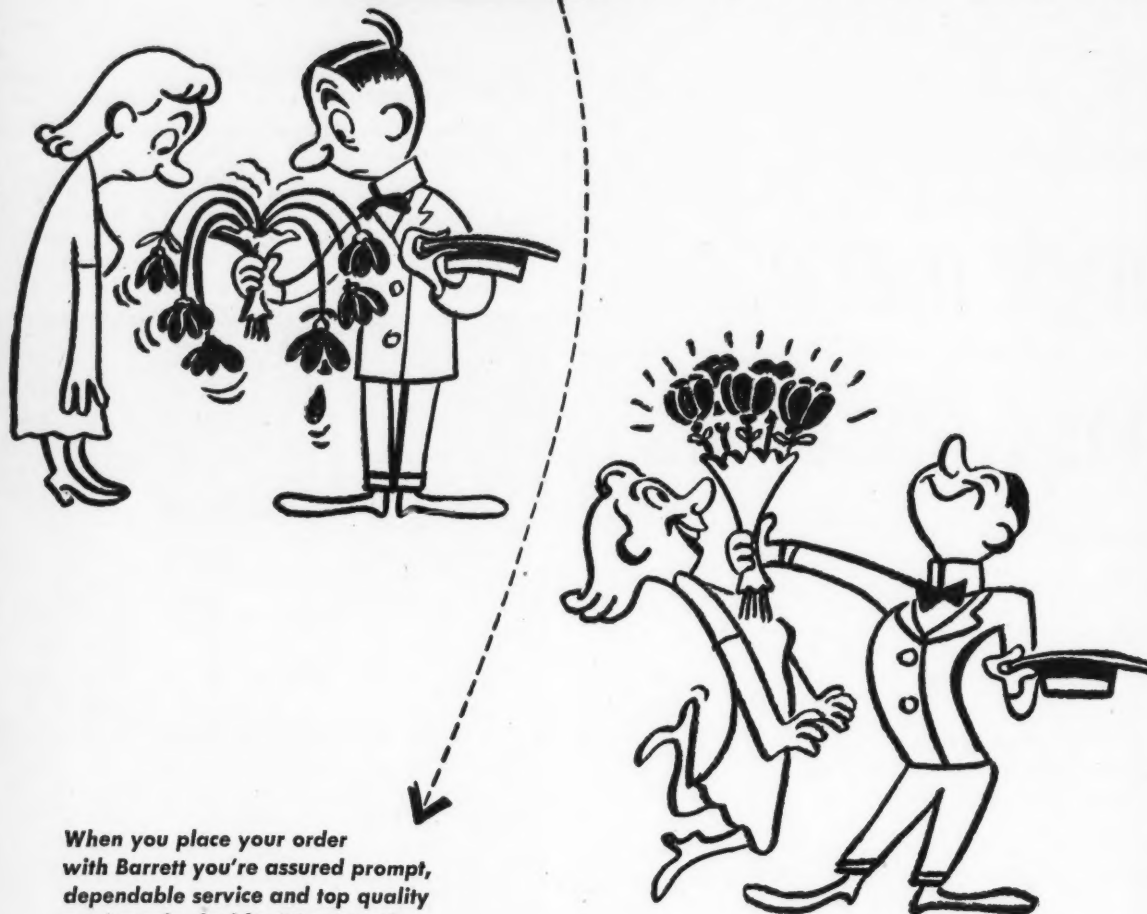
Atmosphere surrounding bagging station is clear when dust control system is working (top), but look what happens when it is turned off (bottom)

reclaims dusts which would otherwise be lost. Up to 45 tons of such dusts as DDT, sulfur, and rotenone are handled per day.

In this plant, stations are provided with hoods. Dust is drawn by an exhaustor through dust-tight pipes to dust collector.

(Courtesy of Pangborn Corporation, Dept. CP, Hagerstown, Md. . . . or for more information check CP 9084 on handy form, pages 2 and 3.)

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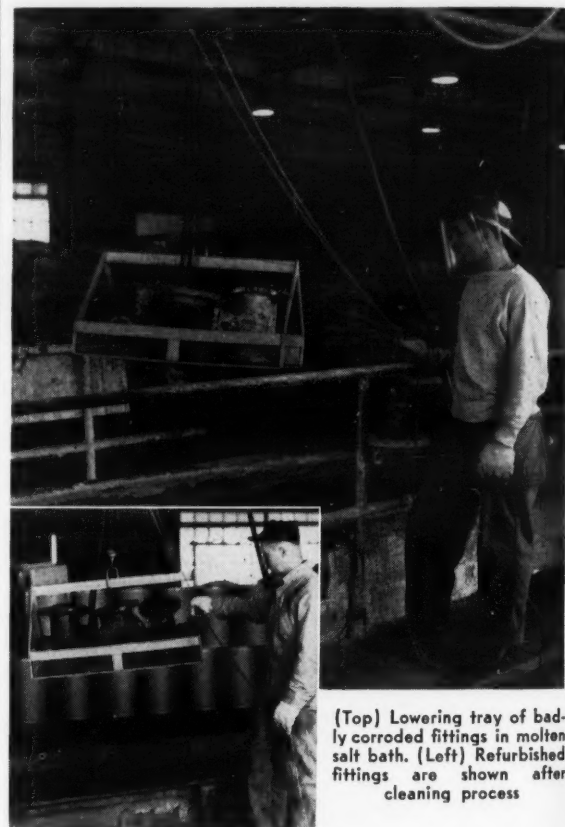
IDEAS

Irreplaceable parts too rusty for service are usable again if cleaned, reconditioned . . .

castings of critical materials descaled in molten salt bath without attack of base metal

A growing shortage of critical materials has placed strong emphasis on conservation, according to the Hooker Electrochemical Company. Unable to replace used or badly corroded parts due to the expanding defense effort, Hooker itself has salvaged over \$20,000 worth of materials, some of them irreplaceable, at a cost of approximately \$3000.

Virgo Molten Cleaner, the company's new metal cleaning agent, has been employed for completely cleaning an assortment of cast iron and steel flanges, nickel pipe, and other miscellaneous pipe fittings and chemical equipment.



(Top) Lowering tray of badly corroded fittings in molten salt bath. (Left) Refurbished fittings are shown after cleaning process

In addition, 190 assorted nickel and alloy valves which had been rejected for repair were cleaned and made acceptable for reconditioning. To date, 132 of these have been returned to service at a reconditioning cost of \$1750, compared with a replacement cost of \$8588.

Time savings over conventional cleaning methods of steaming, brushing, and scraping were realized too. Six alloy pumps varying in size from 1½ to 2", a nickel cooling coil, and a large fan wheel were cleaned in 6 man-hours, but would normally have taken 32 man-hours.

Hooker also found that by cleaning their nickel scrap they had an invaluable bartering material. They could get nickel parts otherwise unobtainable on the market.

Virgo Molten Cleaner was developed for descaling castings and for other metal cleaning applications. Cleaning process is simple and rapid, consisting of a molten salt bath at a temperature of about 850°F, a water quench, and an

CHEMICAL PROCESSING

IDEAS

acid dip. Unlike conventional acid pickling operations, the cleaner does not attack the base metal of the parts cleaned.

(Hooker Electrochemical Company, Dept. CP, Niagara Falls, N. Y. . . . or for more information check CP 9087 on handy form, pages 2 and 3.)

New compilation reveals production statistics of fatty acids . . .

October production of 38.6 million pounds represents first totals that will be issued monthly

First totals of a new monthly compilation of production statistics of the fatty acid industry show an October, 1951, production of 38.6 million pounds (18.4 million in saturated acids and 20.2 million in the unsaturated group).

These figures were recently released by the Fatty Acid Section, Association of American Soap & Glycerine Producers, Inc., and represent production of 20 firms comprising virtually all the companies producing this class of product.

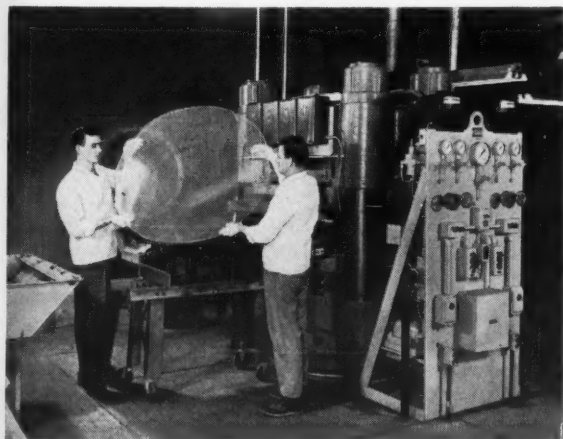
Figures for shipments, plus captive use, in October total 38.0 million pounds, of which some 6 million pounds are export. Total stocks are 40.9 million pounds.

These figures, says the Association, reflect the industry's new product developments and increased use of fractionation and other separation methods to produce 'tailor made' products.

(Summary of information received from the Fatty Acid Section of the Association of American Soap & Glycerine Producers, Inc., Dept. CP, 295 Madison Ave., New York 17, N.Y.)

16-pound, 45-inch solid discs fabricated of Kel-F

One of 600 destined for a large chemical plant, the 45 inch solid disc shown in accompanying photograph weighs 16 pounds and is 0.125 inch thick. In their fabrication from Kel-F — M. W. Kellogg's polytrifluorochloroethylene



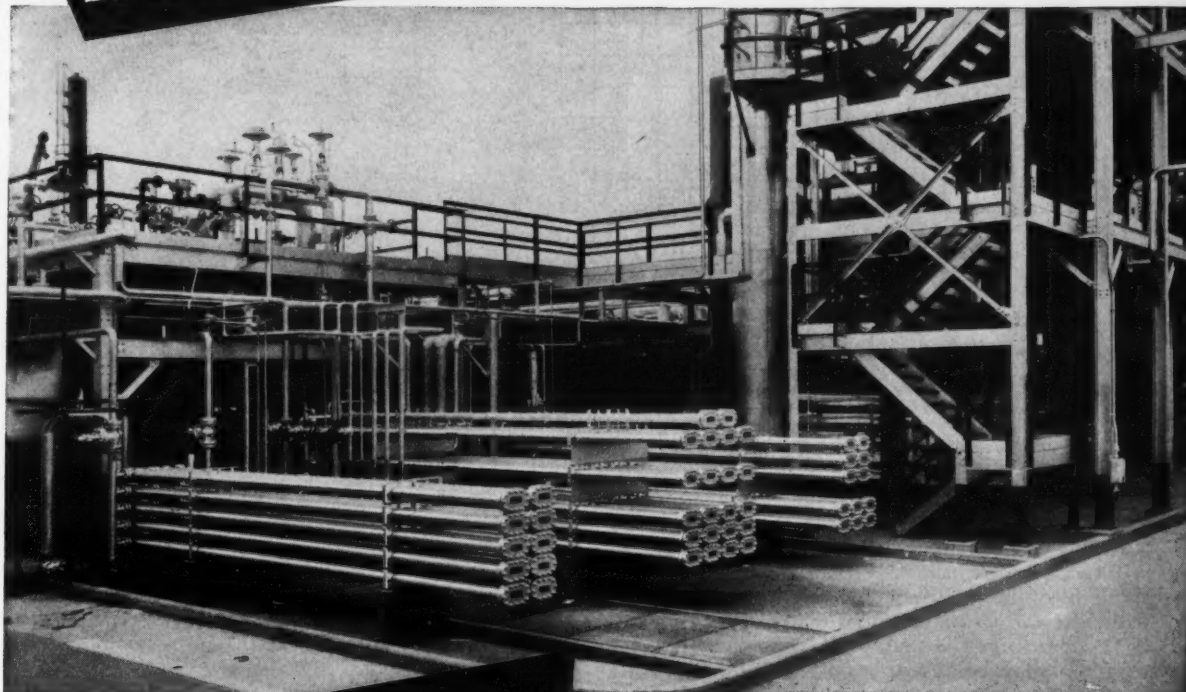
— the discs are held to a tolerance of plus or minus 0.005 inch. Fabricator has also produced fluorocarbon-jacketed gaskets up to 12 feet in diameter.

(Fabricator is Fluorocarbon Products Division, United States Gasket Co., Dept. CP, Camden, N. J.)

FEBRUARY, 1952

Easier Maintenance

in **your** plant



with BROWN FINTUBE

sectional hairpin heat exchangers

● Brown Fintube Sectional Heat Exchangers make maintenance easier and less costly. The integral welded-on fins *positively can not* work loose from the center tube. Their efficient heat transfer at low "skin" temperatures, and the absence of baffles and stagnant areas in the exchanger, minimize coking and fouling.

The ingenious head end assembly, employing a ring joint seal, and the easy to handle rear end cover plate permit an exchanger to be opened, a clean hairpin substituted, and the exchanger put back on stream again in less than ten minutes. For top operating efficiency and easier, less costly maintenance, write for Brown Fintube **Bulletin No. 481.**

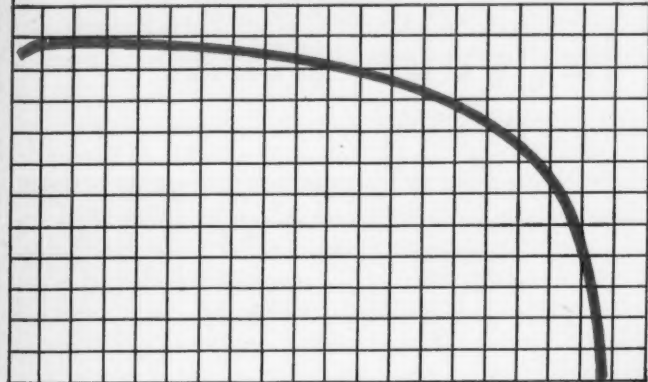
THE BROWN FINTUBE CO.
Elyria, Ohio

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Fintube Heaters for Bulk Storage Tanks
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PLANT PRODUCTION

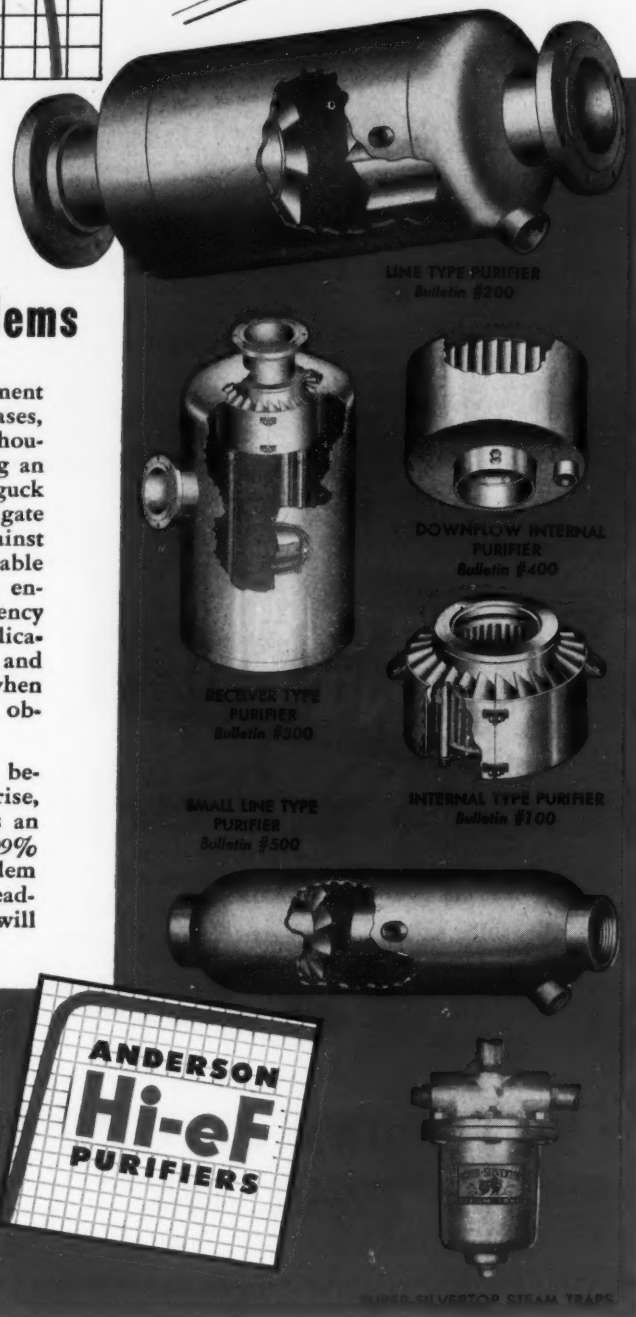


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When inquiring check CP 9089 on handy form, pgs. 2-3

IDEAS

Easy cleaning, warp resistance with expanded metal oven shelves

Precision Scientific Company is now equipping its ovens with expanded metal shelves. Shelves are made by slitting and stretching solid steel sheets to open the metal into the familiar grill with diamond-shaped openings. This work is done by the Wheeling Corrugating Company.

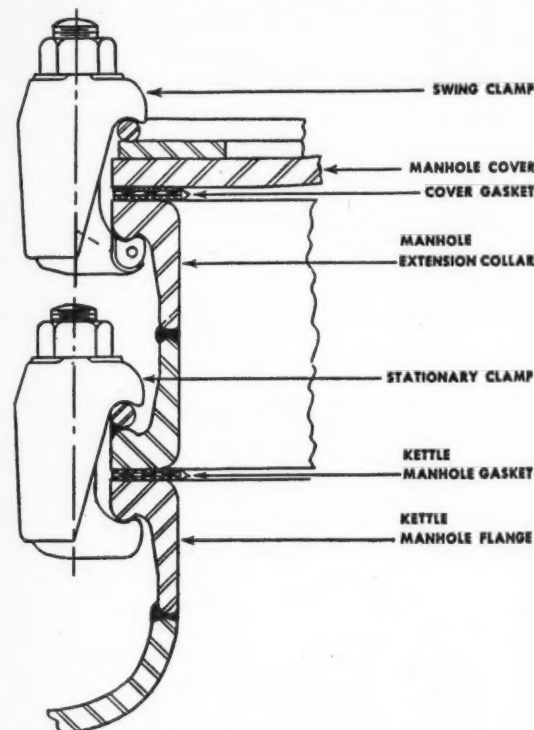
Metal shelves are nickel plated to reduce corrosion. They are reported to be very easy to clean and free from warping. In addition, they permit free circulation of air in the oven and thus tend to maintain uniform heat. Since they are one-piece construction, there are no soldered joints to loosen at high temperatures.

(Precision Scientific Company, Dept. CP, 3737 W. Cortland St., Chicago, Ill.)

Cost of reactor manhole repair cut by use of glass-lined extension collar . . .

absorbs wear normally taken by main kettle flange, is easily replaced by spare

In most chemical reactors, the manhole flange is subjected to unusual wear because of constant opening and closing of the cover. Particularly where the kettle and flange are lined with glass does this lead to the



Illustrates how glass-lined extension collar is installed on original kettle manhole

need for extensive repairs and attendant lost production time. In many cases, it is necessary to re-line the entire shell of the reactor when an integral manhole is damaged.

A glass-lined manhole extension collar has recently been developed to minimize the repair costs. As can be seen in the diagram, the collar is assembled on the main

CHEMICAL PROCESSING

IDEAS

kettle flange and will absorb the wear to which the main kettle flange was subject previously. When the collar is chemically or mechanically damaged, it can be replaced quickly by a spare one.

Standard design, 12 by 16", can be used on manufacturer's R Series kettles installed since the beginning of 1951. A special design is available for older R Series reactors and for those in the E Series.

(Further information can be obtained from The Pfaunder Co., Dept. CP, 1000 West Ave., Rochester 3, N. Y. . . . or for more information check CP 9090 on handy form, pages 2 and 3.)

Supply of plastics better now than year ago

The supply situation in regard to plastics raw material has improved substantially from a year ago, reports the executive vice president of The Society of the Plastics Industry, William T. Cruse. While one or two of the scores of different types of plastics are still a bit tight, in the main, plastics raw materials are generally available. Benzene from abroad and from petroleum, additional plant facilities, and unused styrene from Rubber Reserve are responsible for this.

SPI estimates for synthetic resin production are as follows: 1,182,500 tons in 1951, and 1,300,000 tons for 1952.

(Summary of information received from The Society of the Plastics Industry, Inc., Dept. CP, 67 West 44th Street, New York 18, N. Y.)

Belt conveyor system running all winter at Michigan iron mines . . .

clean side of belt always rides pulleys and idlers, preventing buildup of ice, tackiness on surfaces

Belt systems carrying iron ore from underground mines to carriers have usually been shut down during winter because the sub-zero temperatures developed maintenance difficulties. For example, sticky components or dampness in the ore, although offering little or no problems during the warmer months, will cause sticking or freezing of belt to pulleys and idlers during winter in Minnesota and Michigan where the temperature sometimes drops to forty below zero.

Even though lake shipping comes to a standstill when harbors and locks freeze, mines like to operate the year round, stockpiling the ore for the carriers.

Mines near Ishpeming, Mich., are pioneering with a new conveyor system that eliminates the difficulties of winter operation. System, developed jointly by B. F. Goodrich Company and Chain Belt Company, uses a rubber belt that is flipped 180° by two twist pulleys at each end of its run. Thus, clean side of belt always runs on top of the return idlers. Deckplates to protect the return run are not needed; any spillage on this lower run is carried to end and automatically dumped for subsequent reclaiming.

According to Goodrich, the system can be used wherever messy, sticky materials must be handled—phosphates, raw sugar, lignite—as well as corrosive materials such as salt, fertilizers, and sulfur which attack the metallic understructure and return idlers of a belt conveyor system.

(Information courtesy of B. F. Goodrich Company, Dept. CP, Akron, Ohio.)

FEBRUARY, 1952

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Celanese Solvent 301 is approximately two parts secondary butanol and one part of normal propanol. It is used **economically** in nitrocellulose formulations, in brake fluid mixtures, and in diluent and extender applications.

Celanese Solvent 601 is a low cost proprietary solvent containing methyl ethyl ketone, butylene oxides, and certain acetals. It is offered as a **cost saving replacement** for MEK to meet the requirements of vinyl and nitrocellulose solution formulators . . . lacquers and thinners.

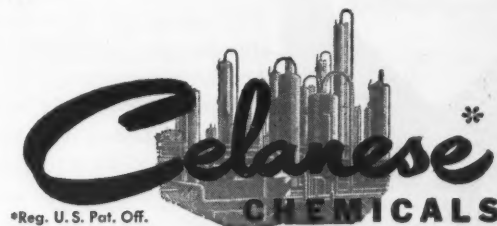
Celanese Solvent 901 is a high solvency alcohol-type solvent competing with MIBC (Carbinol) and methyl amyl acetate. It is used as the high-boiling component of lacquers, thinners, and other coating formulations. It is recommended for control of blush resistance and flow.

Take advantage of the **all-around economy** of Celanese Special Solvents. Write for chemical bulletins and sample quantities. Evaluate them for performance and **cost savings** in your products. Celanese Corporation of America, Chemical Division, Dept. 555-B, 180 Madison Avenue, New York 16.

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When inquiring check CP 9091 on handy form, pgs. 2-3



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WORTH OF ACTHAR

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When inquiring check CP 9092 on handy form, pgs. 2-3

IDEAS

Make-up air for spray booths or fume hoods is heated by separate unit . . .

will prevent drain on central plant heating system

When a fume hood, paint spray booth or similar installation is not supplied with enough make-up air to replace that removed by the exhauster, a number of difficulties can occur. For instance, the exhauster may operate inefficiently, letting fumes escape into adjoining areas. Or, due to the negative pressure in the booth or hood, drafts will bring in dust and dirt to contaminate the work. In winter especially are these drafts troublesome. They not only cause the worker discomfort, but they also can overload the plant heating system.

An experimental unit for heating make-up air has been built and tested successfully. Variations of this model would be installed in intake ducts, for example, and would operate independently of the main heating system. Although the air is heated by passing over a system of open burners, extensive tests have shown that the heated air stays well within the limits of safe CO concentration, even with a rich combustion mixture and high air velocity. Allowable concentration is 10 parts CO to 1,000,000 parts air.

The test unit, shown in Figure 1, was built to deliver 6000 cfm of air, heating it from -10 to 80°F. It was

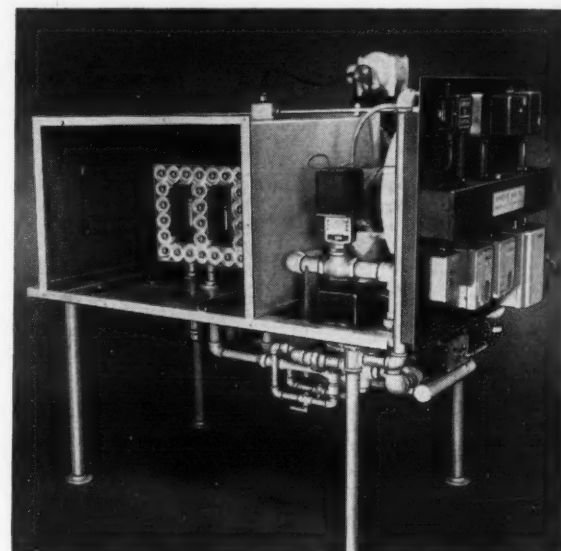


Figure 1 — Experimental air make-up unit, showing series of ceramic bowl burners at left

tested at air velocities ranging from 800 fpm to more than 2200 fpm, over the entire throttling range of the burners. The burners were found to light in the high-velocity air stream, within the full throttling range.

Heated air was not only practically free of CO; it did not contain any foul or unburned gases. According to the manufacturer, the equipment for industrial use will be quite flexible and could be built into a smaller duct than most other types of air-heating equipment.

The burners used in the equipment have been used for years in drying ovens, furnaces, roasters and other equipment. Figure 2 shows a series of these burners arranged in a network similar to the one employed in the experimental air make-up unit.

The fuel mixture passes up through a nickel-chrome

CHEMICAL PROCESSING

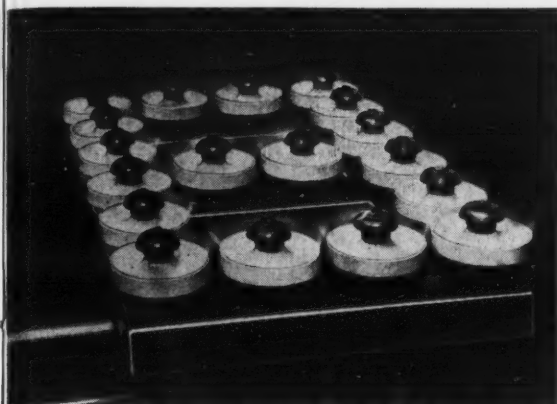


Figure 2 — Umbrella-shaped baffles at top of each burner direct flame into concave surface of refractory, assuring high heat, complete combustion

alloy thimble going through the center of the saucer-shaped, refractory combustion bowl. As it leaves the orifice formed between the thimble and the umbrella-shaped baffle at the top, it ignites. The baffle directs the flame down against the concave refractory surface. Combustion is completed by the time the gases reach the outer edge of the burner.

Refractory temperature is raised to over 2000°F in about 30 seconds from a cold start. Since the mixture cannot pass through such a high-temperature zone without being completely burned, high efficiency is assured and products of combustion are clean and free of diluted or unburned gases.

(More information can be obtained from the maker, the Burdett Manufacturing Company, Dept. CP, 3433 W. Madison St., Chicago 24, Ill.)

How tight is tight shut-off? . . .

example: butterfly valves on 40 psi, 400°F leak less than 0.25% of cross sectional area they service

Butterfly valves are being built to meet accepted commercial requirements for shutting off air, gases, and other fluids. Leakage tolerance with the valve in the closed position varies with the purpose for which the valve is used. Where shut-off must be absolute, it is assumed that the vane or blade must rest or seal against a surface which will make a tight seal. For such purposes, a rubber-lined body is desirable.

Where metal to metal contact is required, especially for valve operation at higher temperatures, leakage can be minimized only through careful machining, grinding, and fitting. This is particularly a problem where higher operating pressures are involved.

For example, butterfly valves are now being supplied for installation in ducts handling hot air and cooled products of combustion at a maximum operating pressure of 40 psi and temperatures from 300 to 400°F. Such valves range in size from 12 to 24" pipe size, and are handwheel, chain wheel, or air diaphragm motor operated, depending upon location and speed of closing action. Here, maximum allowable leakage rates must not be in excess of 1/4 of 1% of the duct cross section.

(Butterfly valves meeting these specifications are supplied by the W. S. Rockwell Company, Dept. CP, 200 Eliot St., Fairfield, Conn.)



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When inquiring check CP 9093 on handy form, pgs. 2-3

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FLEXIBLE

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Dependable

BWH Concord #20 Steam Hose has a protective built-in lining of stainless steel wire braid that guards against tube swelling . . . assures dependable, long-lived service.

This rugged, braided inner lining assures maximum steam flow . . . permits easy recoupling in the field.

Other Concord #20 construction features: two or three braids of alternate high tensile steel wire and rubber layers firmly bonded over outside of tube. These provide maximum burst-protection and safety. An asbestos braid provides positive cover adhesion and acts as cover insulator. A durable, abrasion-resistant cover withstands severest abuse.

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Illustration shows how special built-in lining of stainless steel inner wire braid assures long life under the most severe operating conditions.

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When inquiring check CP 9094 on handy form, pgs. 2-3



IDEAS

Pre-stressing steel in construction slabs to save steel, concrete . . .

anticipate far greater spans with this slab than with other modes of construction

Research begun at Southwest Research Institute will endeavor to show that pre-stressing steel used to reinforce flat concrete construction slabs could possibly lead to a savings of 1/2 the steel and 40% of the concrete required by other construction methods. Method is known as Youtz-Slick Lift Slab Construction, developed by Southwest's affiliated Institute of Inventive Research.

A test slab will be investigated to determine factors concerning load, deflections, bending moments, stresses, and safety. Results of this investigation will be applied to a full-scale slab (88 x 38' in area and 1' thick) used as the roof of a new building. The slab will have 8 support columns on 24' centers.

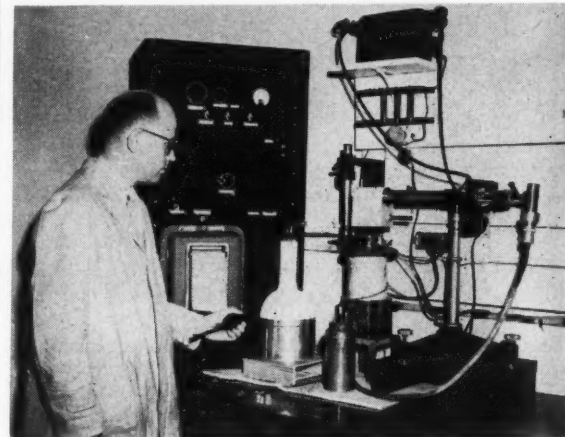
In addition, far larger spans are anticipated from this construction than from ordinary methods.

(Summary of information received from Southwest Research Institute, Dept. CP, San Antonio, Texas.)

Photoelectric instrumentation makes NBS plastics test fully automatic . . .

system uses two recorders to find transition points of high polymers to within 0.5°C

Several years ago the Bureau of Standards developed a very accurate method of finding the transition points of high polymer material. The method depended on measuring very small changes in the length of the polymer with varying temperature. This was done by means of a light interference system where the plastic



Instrument set-up that assumes tedious counting task formerly falling to operator

material was used to control the distance between two glass optical flats. Continuous undivided attention of the operator was needed to check the number of interference bands passing across the flat. These, as measures of dimension changes, were plotted against temperature for the final result.

Navy interest in rubber materials for arctic use spurred NBS into improving the earlier device. Using the same basic instrument, Dr. R. N. Work, of the bureau, has devised a way of making the measurement entirely auto-

CHEMICAL PROCESSING

matically. Three thin sheets of the polymeric material are sandwiched with the two optical flats in a temperature controlled chamber. Another piece of the material to be tested is maintained at the same temperature and has a thermocouple imbedded in it. Monochromatic light from a helium tube source is passed into the optical sandwich, and reflections from the upper surface of the lower optical flat and the lower surface of the upper flat within a single small area are focused on a photomultiplier tube.

At the start of a measurement, quartz wedges are used to adjust the two flats for near-parallelism. As heat or cooling comes into play, changes in the relative position of the flats cause interference bands to move across the plate. These bands, which are due to changes of dimension of the polymer, are picked up by the photomultiplier tube and plotted against time on a recorder. This recorder also produces a current pulse as each band passes. A second recorder, driven a unit distance by each of these pulses, is used to record the polymer temperature (from thermocouple). Any transition point of the polymer can now be quickly spotted as a change in slope in the graph of the second recorder.

As well as pinpointing the transitions to within 0.5°C or better, this device gives values for coefficient of expansion reproducible to within 5%. Both the tedious procedure and possible human error of the former method are eliminated.

(Summarized from Technical Report 1594 of National Bureau of Standards, U.S. Dept. of Commerce, Washington 25, DC.)

Buna N rubber being used in a variety of ways as modifying material . . .

for phenolic resins and polyvinyl chloride; end characteristics surpass those of starting materials

Use of Buna N type synthetic rubber as a modifying material has drawn considerable attention. One rubber, Hycar, is being used as a non-migrating, non-extractable plasticizer for polyvinyl chloride for food packaging films and electrical insulation. It is also being used as a modifier for synthetic resins in adhesives and cements.

The Compo Shoe Machinery Corporation, Boston, Mass., is employing phenolic resins modified with Hycar in a variety of ways. One Hycar-phenolic is being used as the 'toe rubber' which rests on the toe of a shoe to hold it in place while the platform is attached to the sole. Good abrasion resistance is required here — ordinary rubber failed after two months, but Hycar-phenolic holds up as long as two years.

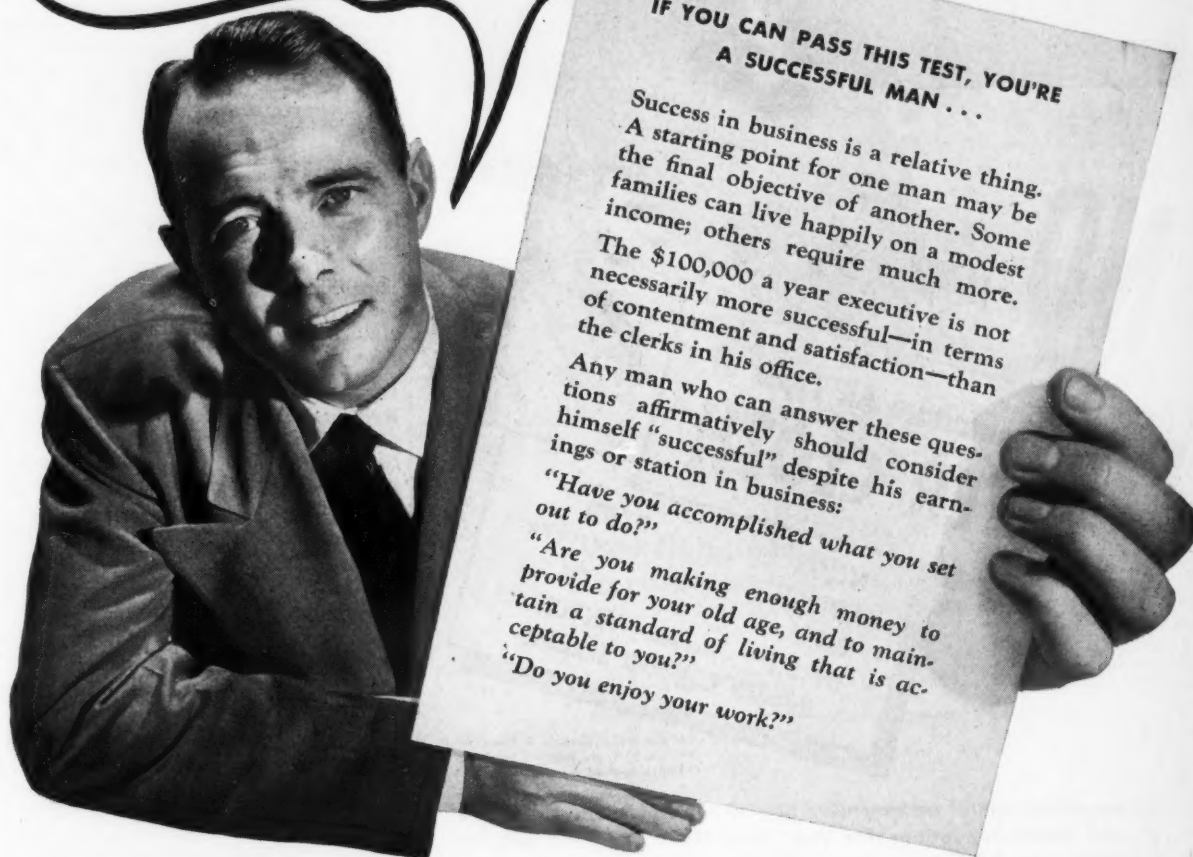
Another use of Hycar-phenolic is in a washer essential in the mechanism of several Compo machines. Resistance to oils and grease is necessary. Previous washers had to be replaced every three weeks; new ones have been in service over three years.

Preparing the sole of a shoe for cementing is done by a high speed rotary rougher. A Hycar-phenolic roller feeds the soles into the machine (up to 3600 pairs in an 8-hour day). By changing the Durometer hardness of the rollers, any type of soling material can be handled. This is a tough abrasive service and Hycar-phenolic has surpassed all other materials tried.

(Hycar American rubber is a product of the B. F. Goodrich Chemical Company, Dept. CP, 324 Rose Bldg., Cleveland 14, Ohio.)

FEBRUARY, 1952

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Success in business is a relative thing. A starting point for one man may be the final objective of another. Some families can live happily on a modest income; others require much more. The \$100,000 a year executive is not necessarily more successful—in terms of contentment and satisfaction—than the clerks in his office.

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"Do you enjoy your work?"

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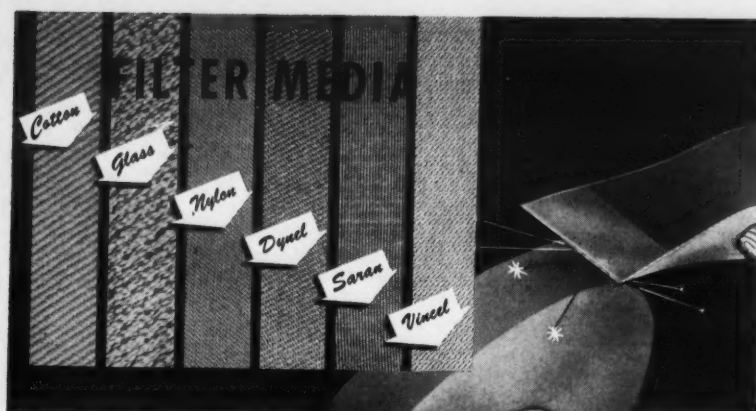


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IDEAS

Reinforced plastics industry expanding rapidly...

additions to fibrous glass facilities are enormous; polyester resin production slated for increase

Judging by what has happened in the reinforced plastics industry in the last two years, a rosy future seems to be assured. These materials do not compete with other plastics, but rather with metals, wood, glass, and other structural materials—not as substitutes but as replacements.

While the general heading of reinforced plastics includes all types of plastics resins reinforced with all types of fibrous material, the industry bases its own statistical picture on the use of polyester resins with fibrous glass reinforcement. This is the section of the plastics industry that used to be called low-pressure because these were the first resins that would mold at very low pressures and with the use of little or no heat.

In 1950, sales of polyester resins from nine major makers and some smaller ones amounted to eight or nine million pounds. Between four and five million pounds of fibrous glass were sold to the resin users. In 1951, with more resin makers in the picture, resin volume was between 13 and 14 million pounds, fibrous glass volume somewhat over seven million pounds.

If all facilities suitable for polyester resin production were to be used, the industry could probably supply at a rate of 24 million pounds per year today. By the end of 1952, expanded facilities should be able to produce at the rate of 27 million pounds per year or better.

Companies concerned are American Cyanamid Co.; Pittsburgh Plate Glass Co.; Rohm & Haas, Inc.; Bakelite Co., Div. of Union Carbide and Carbon Corp.; U. S. Rubber Company's Naugatuck Chemicals Div.; Interchemical Corp.; Atlas Powder Co.; Plaskon Div. of Libbey-Owens-Ford Glass Co.; Marco Chemicals, Inc.; Ferro Enamel Corp.; and Shell Chemical Corp.

On the glass side of the picture, current expansion is proceeding at a terrific rate. Owens-Corning Fiberglass Corp. alone will have, by May, 1952, an installed capacity triple that which it had in early 1951, that new capacity alone being more than the present rate of the entire fibrous glass industry. Besides Owens-Corning Fiberglass, there are Glass Fibers, Inc., and Glass Floss Corp., who have been in the business for some time. Newly added and soon to come into production is a fiber glass division of Pittsburgh Plate Glass Co., and one of Libbey-Owens-Ford Glass Co. Perrault Brothers and Ferro Enamel Corp. are two more in the field, Ferro being a new facility.

Many fibrous glass facilities can be switched quickly from mat to rovings, to yarn, to monofilament, so that regardless of other uses for fibrous glass, plenty should be available for use in reinforced plastics.

(From The Society of the Plastics Industry, Inc., Dept. CP, 67 W. 44th St., New York 18, N. Y.)

Aluminum can be dyed in 2 minutes or less by immersion...

parts given shades of brass or gold are said to look like the real thing

Aluminum and most of its alloys can be dyed yellow, blue, green, gold, brass or other colors by a recently developed process. Reports are that aluminum objects dyed brass or gold resemble those metals in appearance.

Procedure is to immerse cleaned parts in a solution of salts



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**SAVED OVER \$4224
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When inquiring check CP 9097
on handy form, pgs. 2-3

CHEMICAL PROCESSING

(called "Alumox 44") at 190 to 210°F. These salts deposit a thin coating that protects against finger marking and weathering, and which is relatively non-conductive. Dyeing (with separate recommended dyes) is accomplished either while coating (by mixing dyes into process solution) or after coating. Coloring is accomplished in 15 sec to 2 min. In most cases the dyed finish is covered with a clear lacquer.

(Manufacturer is Enthone, Inc., Dept. CP, 442 Elm St., New Haven, Conn.)

Alcoa installing 13,200-ton extrusion press . . .

will open up new limits for designers; press will extrude pipe with 20 inch outside diameter

The largest extrusion press in the nation is being installed at the Lafayette, Ind., works of Aluminum Company of America. Leased from the U. S. Air Force, the press exerts a force of 13,200 tons, $2\frac{1}{2}$ times as much as the largest now operating in the country. The press will not be ready to operate for a year, and even then its main job will be for military requirements, mainly aircraft. However, Alcoa is willing to discuss other designs that could be made on the press.

As an indication of the potentialities of the press, Alcoa will be able to quadruple the weight of its extrusions from 600 pounds per piece to 2300 pounds. While maximum length remains at 90 feet, the size which can be produced in that length increases from 6.7 pounds per foot of length to 25.5 pounds, or from 5.6 square inches in cross-sectional area to 21.3 square inches. Maximum circumscribing circle diameter for shapes may increase from the present 14 inches to 23 inches.

With the new press Alcoa will not only be able to extrude shapes of a given thickness substantially larger in cross-section than at present, but also shapes of a given size substantially thinner. For example, in one of the strongest aluminum alloys, Alcoa 75S, it will be possible to make a 0.187 inch thick shape up to 16 inches in width instead of seven inches. Or a 13 inch wide 75S shape may be shaved to a 0.156 inch thickness compared with a 0.437 inch thickness at present.

Even more interesting are the new limits for extrusion of pipe. 61S, 62S, and 63S Alcoa aluminum alloy pipe can be extruded in sizes ranging through a 20 inch outside diameter; previous limit 12 inches. Maximum length will vary, depending on size and wall thickness, from 40 feet for 20 inch ASA Schedule No. 40 (0.593 inch wall) to 100 feet for 20 inch ASA Schedule No. 10 (0.250 inch wall).

(Information courtesy of Aluminum Company of America, Dept. CP, 801 Gulf Bldg., Pittsburgh 19, Pa.)

Brilliant deposits of zinc direct from plating bath

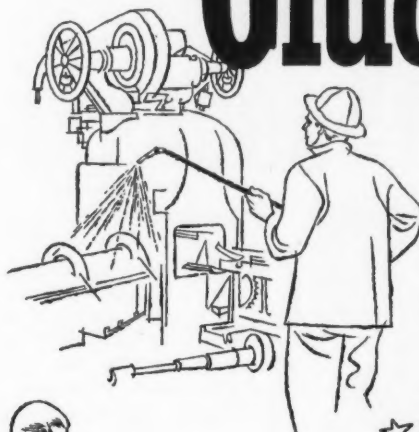
Exceptionally brilliant electro deposits of zinc that can be obtained directly from the plating bath is the theme of a 9-page data bulletin entitled "BSZ-300 Process for Bright Zinc Plating in Still Tanks." Complete details of the process, including use of a special brightener and addition agent, are covered. Pointed up is the fact that many existing zinc plating solutions can be made to produce a bright deposit by adjusting constituents.

Issued by the Hanson-Van Winkle-Munning Company, Dept. CP, Matawan, N.J. When inquiring specify CP 9098 on handy form, pages 2 and 3.

FEBRUARY, 1952

What Properties in an Acid Do You Need Most?

Gluconic Acid is



★ Non-corrosive!

Extensive laboratory tests have shown Gluconic to be the least corrosive of the mild acids.

★ Non-toxic!

Other tests have demonstrated this acid's non-toxicity. It is widely used in pharmaceutical preparations.

★ An Effective Sequestering Agent!

Inactivates metallic contaminants. Keeps trace metals from precipitating out of solution.



These properties explain why Gluconic is a versatile acid. It is used widely as an ingredient of cleaning compounds, particularly those used for food and beverage equipment, and is effective in beerstone prevention. It is used in the textile industry as an acid catalyst for vat soluble ester printing pastes and as a sequestering agent to give sharper prints in dyeing operations. It is also used as a sequestering agent in tanning and in industrial water treatment.

Gluconic acid may be the mild, non-toxic acid you have been looking for. It may help improve your present processing operations or suggest new ones. Additional information is contained in Technical Bulletins Nos. 29 and 33. Write:

CHAS. PFIZER & CO., INC.
630 Flushing Ave., Brooklyn 6, N. Y.

425 North Michigan Ave., Chicago 11, Ill. 605 Third St., San Francisco 7, Calif.

Manufacturing Chemists

for Over 100 Years



PFIZER

When inquiring check CP 9099 on handy form, pgs. 2-3

UNIQUE NEW Sier-Bath

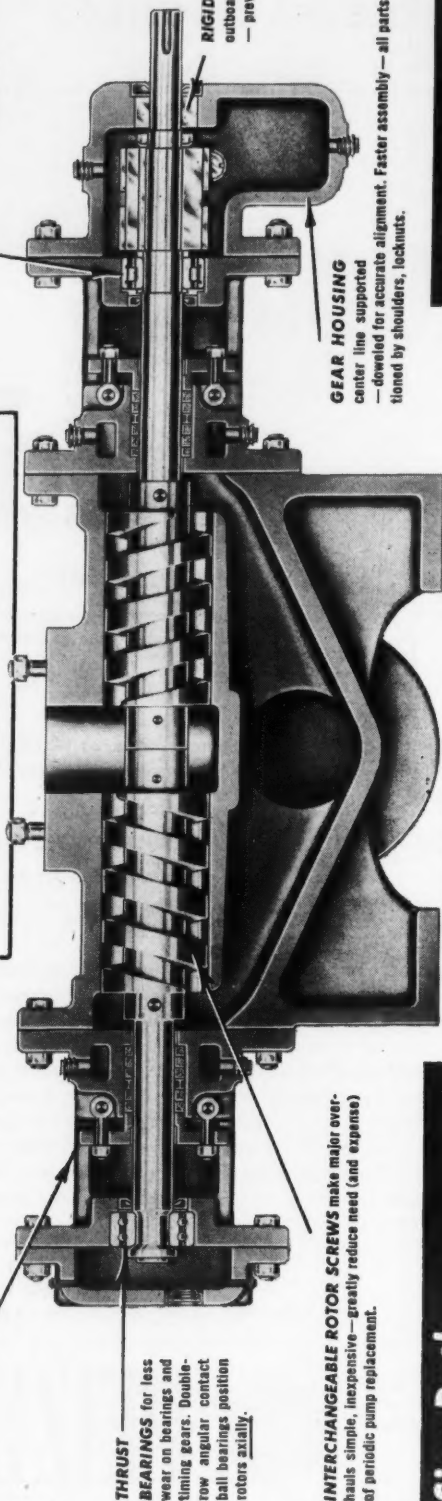
External Gear & Bearing
Bracket Type

SCREW PUMP

FOR non-lubricating fluids, semi-fluids. Capacities 1-700 GPM; Discharge 1000 PSI for viscous liquids, 500 PSI for water. Also available in Hopper and Liner Types.

RUGGED BRACKETS won't twist rotors out of alignment.

ROLLER BEARINGS where they're needed—at point of high radial load.



SINGLE-POINT ALIGNMENT speeds servicing—eliminates rotor distortion during installation, or when handling hot material.

Sier-Bath GEAR and PUMP CO., Inc.

9260 HUDSON BLVD., NORTH BERGEN, N. J.

For Further Information, See Your Local Sier-Bath Representative, or Write to Factory

Also Manufacturers of Gearax Pumps, Precision Gears, and Gear Couplings

IDEAS

Phenolic type coating picked for inside of solvent-vapor degreasing machine . . .

easily patched coating performs as well as nickel-clad steel

Detrex Corporation is using a recently developed nonporous, phenolic type coating for meeting the severe conditions existing within the corporation's VS-800 hand-operated, solvent-vapor degreaser. Machines coated with the coating—called FF-1—have been production tested for several years without sign of failure, showing service life comparable with that of machines fabricated from much more expensive nickel-clad steel.

FF-1 is reported to be impervious to trichlorethylene and perchlorethylene besides being strongly resistant to any chemical break-down that might be caused by water-solvent mixtures and relatively strong solutions of acids and alkalis and their vapors.

Repair of damaged coating is simple, consisting of abrading damaged area with fine steel wool or emery paper, applying FF-1 by brush, and blending the coating by heating the patch with an alcohol torch. Corrosion at damaged area does not tend to spread out beneath adjacent coating since the coating interlocks with metal surface.

FF-1 is not available to industry in general. Possibilities are that a similar compound will be available some time in the future, but this depends on the outcome of a proposed market research program.

(Courtesy of Detrex Corporation, Dept. CP, P.O. Box 501, Detroit 32, Michigan.)

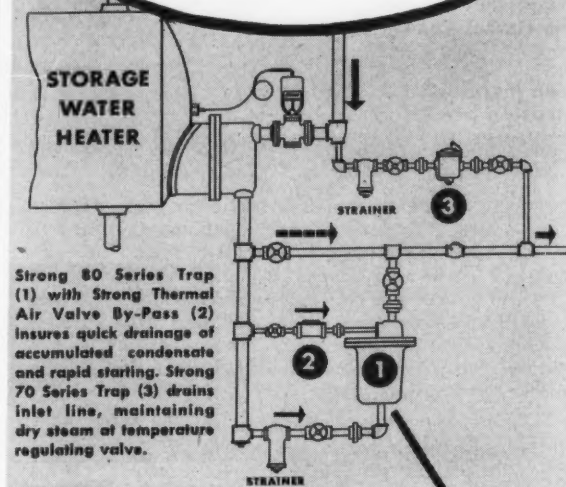
B & W making seamless stainless tubing by new French process . . .

method can make finer, more complicated sections

First seamless stainless steel tubing made in the U.S. by the French Ugine-Sejournet hot extrusion process rolled out of the new facilities of the Tubular Products Division of The Babcock & Wilcox Company, Beaver Falls, Pa., in December. The first lot was Croloy 18-8S, an 18% chromium, 8% nickel alloy.

Main distinguishing feature of this process is use of glass, for a very short time, as a lubricant for the hot worked metal and as an insulator to protect the die system. Reports are that finer and more complicated sections can be made.

GET
Proper Drainage!



Strong 80 Series Trap (1) with Strong Thermal Air Valve By-Pass (2) insures quick drainage of accumulated condensate and rapid starting. Strong 70 Series Trap (3) drains inlet line, maintaining dry steam at temperature regulating valve.

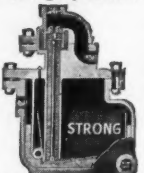
PROBLEM: Condensate accumulates in coils due to lack of pressure when thermostatic regulating valve is throttling or closed. Improper drainage and water hammer result when thermostatic valve opens.

SOLUTION: Drain coils fast. Use trap with four to eight times capacity of actual steam condensate rate. For medium or high pressures, either open or inverted bucket traps are suitable. Use open bucket traps for low pressures.

Completeness of the Strong trap line enables our engineers to recommend exactly the type or size you need—open or inverted bucket, closed float, float-and-thermostatic (blast), etc., forged, welded, cast or semi-steel construction. Bring your drainage problems to us for solution. Send for Strong Trap Catalog No. 68-T today for complete details of all Strong traps.



Strong 80 Series Trap for medium or high pressures.



Strong 30 Series Trap for high, medium or low pressures.

STRONG, CARLISLE & HAMMOND COMPANY



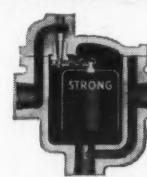
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ANUM-METL
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OTHER STRONG STEAM SPECIALTIES



Reducing Valve



70 Series Trap



Strainer

STRONG

When inquiring check CP 9101 on handy form, pgs. 2-3

CHEMICAL PROCESSING

When inquiring check CP 9100 on handy form, pgs. 2-3

Odor abatement program is being contemplated by Philadelphia . . .

Franklin Institute has found way of measuring bad smells — the first step toward regulation

While it has been possible to draw up and apply municipal regulations in regard to smoke, noxious fumes, and noise, such regulations involving odors have been lacking because of the difficulty of measuring "bad smells" by any sure method. One year of experiment by Philadelphia's Franklin Institute has produced evidence that chemicals responsible for obnoxious odors can be dealt with scientifically as contaminants, and as such can be made subject to routine regulation and abatement.

Work was done under sponsorship of the Philadelphia City Planning Commission and the Philadelphia Redevelopment Authority. Money was provided by the city because of its vital interest in eliminating odors which have blighted areas such as the Aramingo section where experiments were conducted.

Equipment was designed, built, and modified to collect and concentrate the chemicals causing the odors. Samples were liquefied in a special liquid-nitrogen condenser. This liquid sample was then analyzed in an infrared spectrometer. From these experiments, a simple tester was developed that can identify certain malodorous compounds in the field.

Sixty-five plants in the area were studied, 23 of which were considered to produce objectionable contamination of the air (such as fertilizer plants, glue factories, smoldering dumps).

The city hopes to obtain a vote for funds for further investigation. Eventually, city codes for odor control may be enforced strongly.

(Courtesy of The Franklin Institute of the State of Pennsylvania, Dept. CP, Philadelphia 3, Pa.)

Eliminates reference tables, incorporates factors on sliderule . . .

rule is set up to calculate weight of standard shapes of many metals — also figures areas, volumes

A lightweight magnesium alloy sliderule, $12\frac{1}{4} \times 2 \times 5/32$ ", is marked with special scales and factors which allow weight and volume problems to be figured in a minimum number of operations. In addition to conventional polyphase and trig scales, the rule has a thickness scale running from $1/32$ " to 5', a width scale from $1/16$ " to 10', a length scale from $1/4$ " to 40' and scales supplying factors and information on material, shape and weight. Material scale markings are related to the density of lead, copper, brass, steel, cast iron, aluminum and magnesium, while the shape scale supplies the proper factors for $1/4$ -round, fillet, $1/2$ -round, ball, round, octagon, hexagon, rectangle or square.

Construction of the rule is standard — duplex lucite cursor, aluminum brackets held in place with telescopic screws — and it is used exactly as a conventional slide rule. In addition, however, it can be used to figure weight of standard metal shapes within its size range, areas of triangles, rectangles, octagons and circles or volumes of pyramids or prisms.

(Product of Warren-Knight Company, Dept. CP, 136 N. 12th St., Philadelphia 7, Pa. . . or for more information check CP 9102 on handy form, pages 2 and 3.)

FEBRUARY, 1952

New

Niagara
Filter

Gives

MORE PRODUCTION WITH LESS LABOR

on filtrations involving high % of solids

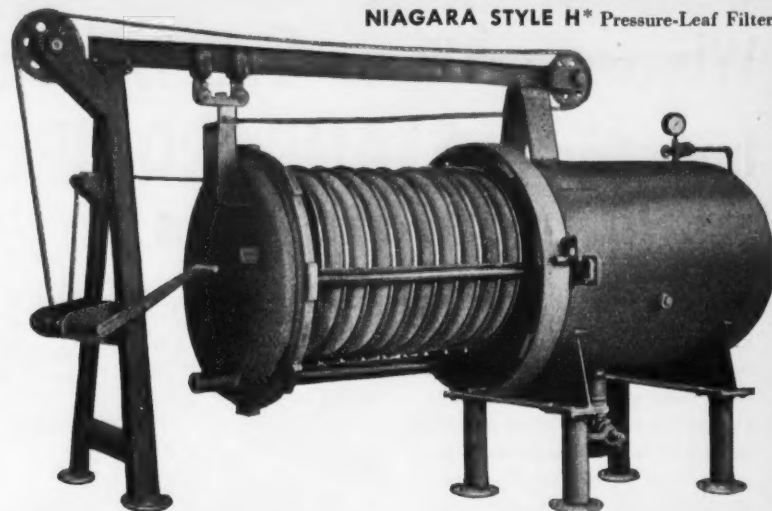
Here at last is a clarifying filter with *high solids capacity* (up to 150 cu. ft. per unit) that gives you production rates *2 to 3 times as fast* as conventional presses—plus quickest, easiest cake discharge ever known! One man, operating several Niagaras, can easily produce as much as *three men* on conventional presses!

CUTS CLEANING TIME TO MINUTES! Gives you far more *productive filter time* per day! One operator easily discharges up to 150 cu. ft. of filter cake, in minutes instead of hours. Cakes are discharged in semi-dry state, ready for disposal or recovery.

ENDS COSTLY CLOTH REPLACEMENT AND WASHING! Press cloths are completely eliminated with Niagara all-metal leaves, proved in use in Niagara vertical filters. You save every penny you now spend on cloth replacement—plus every minute now used to wash and handle press cloths!

Check these advantages—Flow rates to 1000 GPM per unit . . . Solids capacity to 150 cu. ft. per unit . . . All-welded, leakproof construction—safe for handling volatile, flammable, explosive materials . . . Easily steam-jacketed . . . Excellent cake washing characteristics . . . Sharpest filtrate clarity . . . Interchangeable leaves.

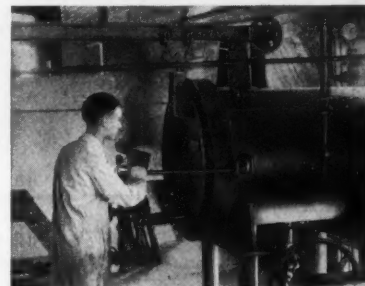
FOR MORE FACTS—mail the coupon or write us today!



LEAVES ROLL OUT as a single unit, for quick easy cleaning. Monorail and windlass assembly are a permanent integral part of the filter. Windlass is hand operated, can be motorized on large filters.



CAKE DROPS OFF when leaves are tapped with rubber mallet. Air-blown cakes separate readily from the stainless steel leaves.



COVER LOCKS and unlocks with one fast, easy motion. A girl can operate the Niagara Q/O* cover. No hand-wheels, eyebolts, spokes or spiders.

*Trade Mark Pat. Applied for.



Niagara Filter
CORPORATION

IN EUROPE—NIAGARA FILTERS EUROPE, 36 Leidsegracht, Amsterdam-C, Holland

NIAGARA FILTER CORP., 3083 Main St., Buffalo 14, N.Y.
Please send me Bulletin H-1051 on the Style H Filter.

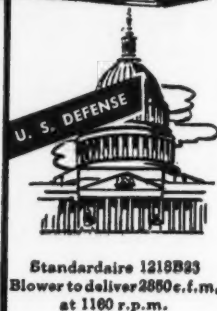
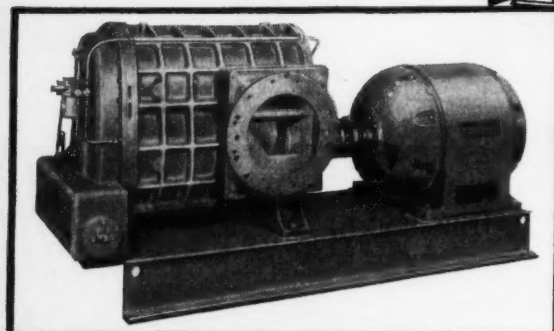
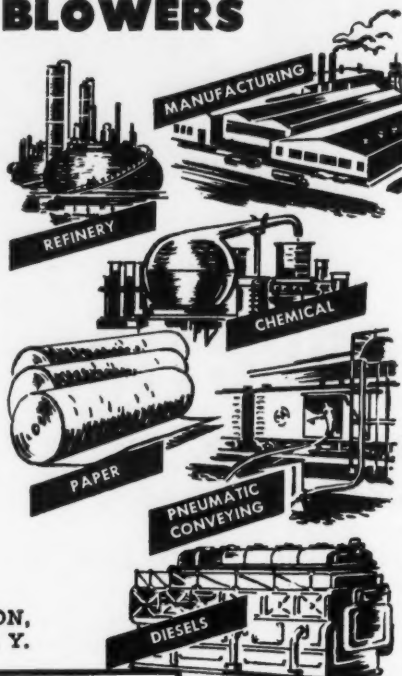
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Company _____
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When inquiring check CP 9103 on handy form, pgs. 2-3

Wherever AIR or GAS is used Investigate **STANDARD** **AXIAL FLOW BLOWERS**

READ STANDARD'S engineered-for-production program has resulted in the acceptance of Standardaire Blowers for virtually every important industry. Blowers are currently being produced for a wide range of applications in a rapidly expanding market — and in many instances to suit specific requirements and specifications. The amazing acceptance of Standardaire Blowers is indicative of their superior operating characteristics, high efficiency and dependable performance in round-the-clock service. For further details we invite you to consult with our engineers. They will be glad to study your air or gas problems and make recommendations. Write Dept. F7

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Engineers like the STANDARDIRE principle

RECENT BLOWER USERS: Amalgamated Sugar Company • Brillo Manufacturing Co., Inc. • Chicago Pump Co. • Cleaver-Brooks Company • Dow Chemical of Canada, Ltd. • E. I. DuPont de Nemours & Co. • Fairbanks, Morse & Company • Hercules Powder Co., Inc. • Hills Bros. Coffee, Inc. • Husky Oil Co. • Koppers Company, Inc. • Monsanto Chemical • National Advisory Committee for Aeronautics • Ozark-Mahoning Co. • United States Navy • Standard Brands, Inc. • West Jersey Paper Manufacturing Co.

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When inquiring check CP 9104 on handy form, pgs. 2-3

IDEAS

High-temp coating is plated on . . .

report tells use of vapor plating process for jet engines

A report prepared by the Battelle Memorial Institute discusses a process for "plating" refractory coatings to meet needs for high-temperature resistant materials in machinery such as jet engines.

A coating of high-melting metals — or borides, silicides, carbides and nitrides of these metals — is produced by the new vapor plating process. This process has the advantage of avoiding contamination.

Report summarizes available literature on formation of refractory coatings by vapor deposition, and includes unpublished work done at the Institute.

(Featured in the November 1951 issue of "Technical Reports Newsletter." Single copies of this issue are available without charge from Office of Technical Services of the US Department of Commerce, Washington 25, D C, or from USDC field offices.)

American-rubber output upped 26 percent by new process . . .

being used in huge Goodrich-operated plant in W. Va.

A new technique of producing "hot" American rubber (made at 122°) is being used in the world's largest rubber plant at Institute, W. Va. Using sugar and other activators, the process will boost production capacity of American rubber by 26%.

B. F. Goodrich Chemical Company developed the process and is operating the plant for the Government. Rated capacity of the plant is 90,000 long tons per year, but current production is at the rate of 102,000 long tons per year, over 13% above rated capacity.

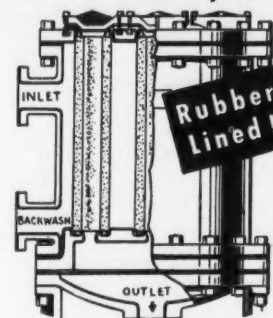
(B. F. Goodrich Chemical Company, Dept. CP, 324 Rose Bldg., Cleveland 15, Ohio.)

Outlines fields of use of radioactive mat'ls

Six basic fields in which radioactive materials may be used in the solution of industrial problems are outlined in this latest issue of a house organ. "Tracerlog, November 1951" is issued by Tracerlab, Inc., Dept. CP, 130 High St., Boston, Mass. When inquiring specify CP 9105 on handy form, pages 2 and 3.

Get Crystal Clear **FILTERING** of Corrosive Acids

Cut Filtering Costs with



ADAMS
PORO-STONE
FILTERS

1 Easy cleaning, without dismantling, by simple backwashing.

2 Safe — eliminates toxic fumes and workers' contact with dangerous acids.

3 Filter shells — rubber or lead lined. Filter tubes inert to acids or alkalis.

Write for Bulletin 9348

R. P. ADAMS CO., Inc. 243 E. PARK DRIVE
BUFFALO 17, N. Y.

When inquiring check CP 9106 on handy form, pgs. 2-3

the
last
word
in
feeders . . .

OMEGA

— for dry materials . . . sea coal, trap rock, Vinylite, hydrated lime, zinc hydrosulphite, activated carbon — and liquids . . . acids, chemical solutions, and suspensions. For Bulletins and complete information, address Omega Machine Company (Division of Builders Iron Foundry), Providence 1, R. I.

omega machine co.

When inquiring check CP 9107 on handy form, pgs. 2-3

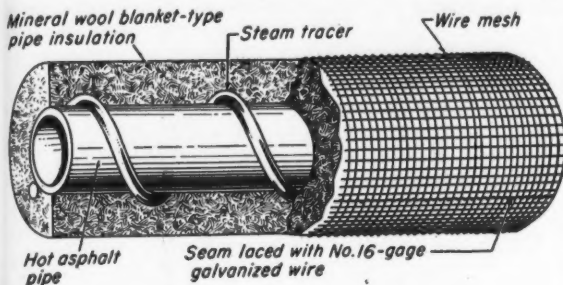
CHEMICAL PROCESSING

Asphalt lines with spiral tracer insulated with mineral wool . . .

flexibility and compressibility of blankets advantageous for application on irregular contours

Many plant engineers have found that blanket type mineral wool solves such troublesome installation problems as the insulation of asphalt pipelines heated by spirally wrapped steam tracers. Blanket type insulation is flexible and compressible enough for installation over the irregular contours of pipelines insulated in this manner.

To insulate the spirally traced pipe in the sketch, each section of blanket type insulation is roughly shaped to fit over the pipe and tracer. Edges of all sections are tightly laced together with 16-gage galvanized wire, with longi-



tudinal seams located on the underside of the pipe. Exposed ends of the lacing wire are bent over into the insulation to eliminate sharp projections.

Expanded metal lath (not shown in sketch) secures the insulation on the inside. It is applied in parallel strips to provide additional flexibility, and bridges across tracers.

Indoor asphalt piping may be finished with two 1/4 inch thick coats of mineral wool insulating cement, and then finished off with lapped and banded asphalt-saturated roofing felt. Asphaltic finishes and canvas jackets, both applied over insulating cement, are also often specified. Outdoor piping may be finished with either roofing felt, asphalt weatherproofing, or a sheet-metal jacket.

(Information supplied by Industrial Mineral Wool Institute, Dept. CP, 441 Lexington Ave., New York 17, N. Y.)

More rugged survey instrument employs audio oscillator to replace microammeter . . .

in charting radioactivity level, operator tunes this meter to the point where he hears a tone start

In order to get away from the use of microammeters which are inherently expensive and delicate, the National Bureau of Standards is offering a new design for radioactivity survey instruments. Heart of the new instrument is an audio oscillator using a thyatron in a relaxation circuit. Thus, no microammeter is needed — reading is given by the potentiometer dial setting where the oscillation begins.

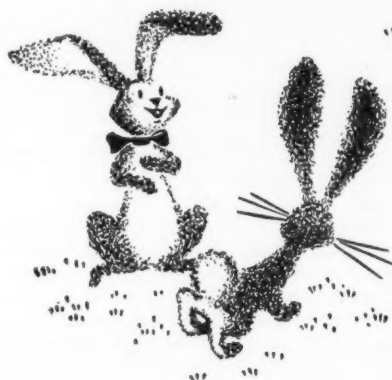
Detection of the radiation is accomplished by a detector tube (GM type, halogen filled) powered through a vibrator supply that works from flashlight batteries. Output of the detector is applied through potentiometer to the grid of the thyatron. Final output of the instrument (a musical note) can be heard by operator who wears a miniature headphone.

(Courtesy of National Bureau of Standards, US Dept. of Commerce, Washington 25, DC.)

You've asked for more . . .

so Brown Company is

**DOUBLING
ITS
PRODUCTION
OF
SOLKA®-FLOC**



So many new applications have been found for SOLKA-FLOC that demand for it has far exceeded the supply. This is why Brown Company is installing a new plant which will double its SOLKA-FLOC production.

Avail yourself of this increased supply of SOLKA-FLOC. Let our Technical Service Staff work with you in finding out how you can use SOLKA-FLOC advantageously in your products. Write to Dept. BF-2, Brown Company, 150 Causeway St., Boston 14, Mass.

Uses for SOLKA-FLOC include plastics, rubber and adhesives. It also has wide application in filtration, for flocking, and as a chemical raw material.

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When inquiring check CP 9108 on handy form, pgs. 2-3

SINCE 1872 Leading American Industries
have depended upon . . .

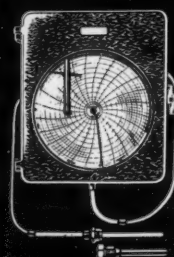
PALMER

MERCURY ACTUATED
Temperature Indicating Instruments



4 1/2" DIAL THERMOMETERS

Made in 3 types to suit any requirements. Rigid stem, wall or flush mounted, 11 inches of scale reading. Interchangeable with standard industrial separable sockets. Stem can be placed at any angle and case can be rotated to any readable position.



RECORDING THERMOMETERS

Twelve inch die-case aluminum case with black or white wrinkle or satin finish. Single or multiple pen construction. Electric or spring wound clock, 24 hour or 7 Day Revolution. Flexible Armor and bulb of stainless steel. Ranges -40 $+950^{\circ}\text{F}$ or Equivalent in $^{\circ}\text{C}$.



INDUSTRIAL THERMOMETERS

Red-Reading Mercury—Extruded brass case—chrome finish. Ranges -40 $+950^{\circ}\text{F}$ or Equivalent in $^{\circ}\text{C}$.

RED-READING MERCURY LABORATORY THERMOMETERS

Thoroughly annealed for permanent accuracy. Complete line A.S.T.M. and fractional division types.

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WRITE FOR CATALOG 200 G

PALMER THERMOMETERS, INC.
CINCINNATI 12, OHIO
Telephone MEIrose 1500

Inserted In Tank, This Instrument Tells Refractive Index of Contents

Novel optical device uses no moving parts — is
powered by small 110 volt bulb

REFRACTIVE index is often a key to what is happening to materials being processed. It can indicate degree of polymerization, concentration of solute, etc. A refractometer can be made to give a practical measure of solids content in some cases.

The O. P. L. Production Refractometer was designed for use by plant personnel. It is calibrated especially for reading solids content of jams, fruit juices, pulp and similar materials undergoing concentration. Solids content can be read because, in simple concentration operations, the ratio between undissolved solids and dissolved material will remain constant as water is removed. Refractive index, varying with solute concentration, must also indicate solids content. Three calibrations of the instrument cover solids content ranges of the above materials as follows: Model A—0 to 50%, Model B—35 to 75%, Model C—65 to 90%. Readings are accurate to about $\frac{1}{2}$ of 1% solids.

It is evident that the instrument can also be used in measuring refractive index of most materials in process. It can be installed in pressure or vacuum vessels, tanks, vats or pipelines and can be used at room temperatures or as high as 100°C . There are no mechanical or optical adjustments to be made — reading is shown directly as the dividing line between a light and dark field on the calibrated ground glass screen.

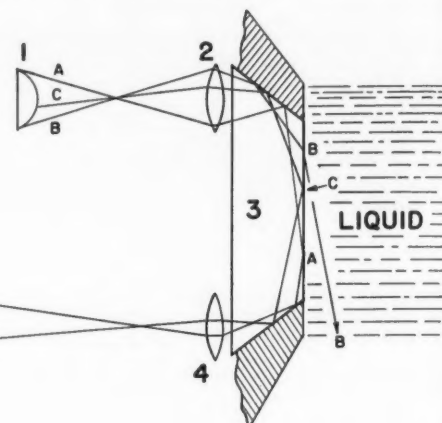
Optical system is made up of a lamp *L* and condensing lens 1 which produce a beam (shown here as rays *a*, *b* and *c*). Lens 2 focuses an image of the light source on a silvered face of prism 3. The reflected rays then travel to the face of the prism in contact with the liquid whose refractive index is being measured. Here, ray *a*, which hits this interface at a very oblique angle, is reflected in the direction of the lower silvered face. Ray *b*, on the other hand, hitting the interface farther up and at a more direct angle, can pass into the liquid and so is not reflected. One ray of light (*c*) will hit the interface at exactly the critical angle. That is, any ray with a more oblique angle will be reflected; any with a more direct angle will pass into the liquid.

Since this critical angle is determined by the ratio of the

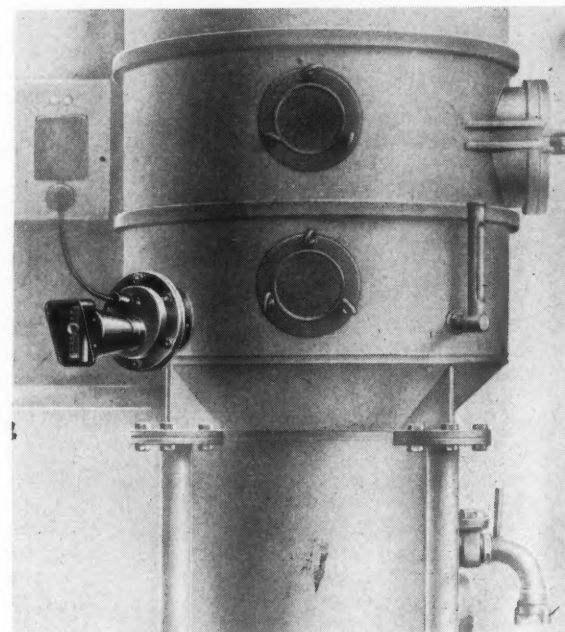
O.P.L. REFRACTOMETER

L -- LAMP
1,2,4 -- LENSES
3 -- PRISM
A,B,C -- RAYS OF LIGHT

LIGHT
READING
DARK
SCALE



Light path through the instrument. Critical angle of refraction is used to produce a direct reading on screen. No adjustments are necessary



Refractometer installed on vacuum pan

CHEMICAL PROCESSING

refractive indices of the glass of the prism and the material in the tank, the angle and location where the reflection stops is a measure of the only variable — the refractive index of the liquid in the tank. It can be seen that rays falling between c and a are again reflected by the lower silvered face of the prism. Lens 4 then focuses them on the ground glass screen. Result of this partial reflection-partial refraction is that a clean line will divide the upper lighted half of the screen from the lower darkened half. Location of this line on the arbitrary scale is a measure of the index of refraction for the tank contents.

Features of the O. P. L. Refractometer include a marker which can be set to show the desired reading. Knob of this marker can be seen next to the scale of the instrument. Scale is also equipped with a light shield to prevent bright overhead light from obscuring the reading. Although scale readings are arbitrary (corresponding to percent solids), tables can be furnished which convert readings directly into refractive index.

Construction material for the portion of the instrument immersed in the solution is stainless steel. Lamp used is powered by 110v AC/DC. The prism can be removed for cleaning when necessary.

(This instrument is available through C. A. Brinkmann & Co., Dept. CP, P. O. Box 532, Great Neck, L. I., N. Y. ... or for more information check CP 9110 on handy form, pages 2 and 3.)

Simple control for gas system can use this low-pressure diaphragm switch . . .

adjustable over a pressure range from 3 to 12" water, it operates on a 2 to 4" differential

Uses: Normally open, or normally closed, single pole switch which is operated by a low differential gas pressure.

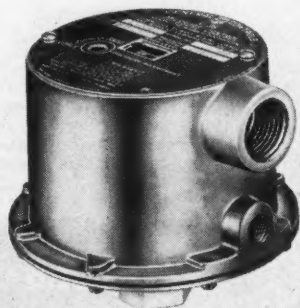
Features: Operates satisfactorily in the 3 to 12" water range — necessary differential to operate is 2 to 4" water.

Description: Low Pressure Switch (L-38) employs a spring loaded diaphragm which, when deflected by gas pressure, tilts a mercury switch. Diaphragm is made of material impervious to all types of gases (including liquefied petroleum gas), but is not suitable for operation with materials other than gas or air. Loading of the diaphragm by the spring mechanism can be varied by adjusting a set-screw located on the accessible top cover plate.

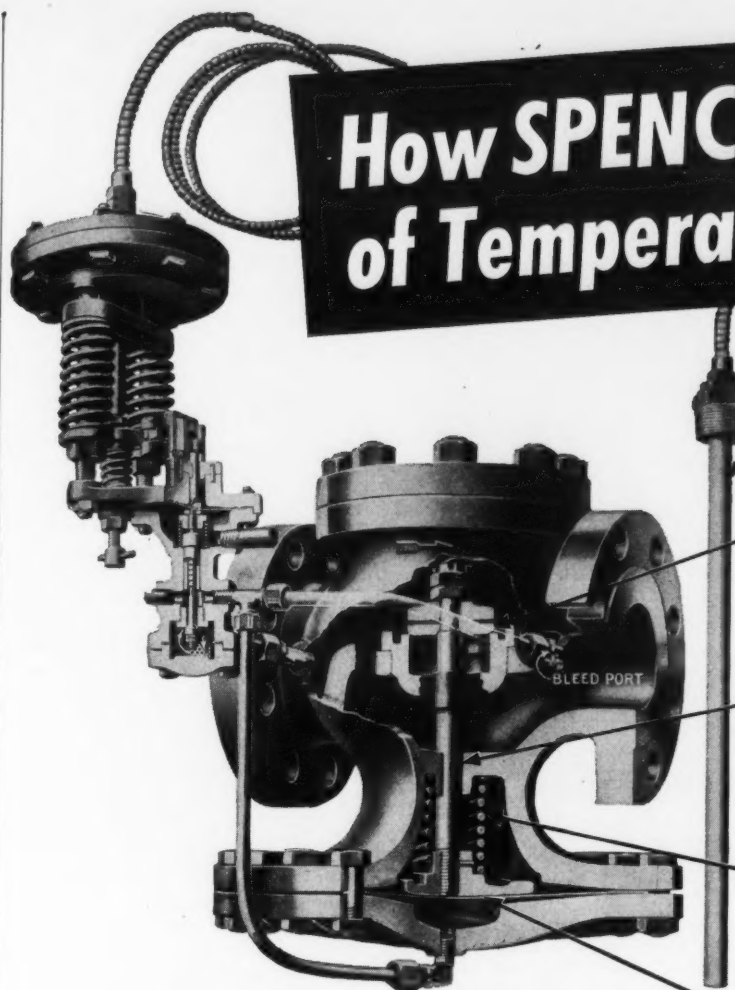
In order to insure level installation of the L-38, a built-in bubble level can be viewed through top cover.

Typical recommendations for use explain how the switch can be installed between an automatic gas valve and the burner. In this location it can be used to switch blowers, or other equipment, "on" or "off" when heating equipment is in use. It can also be used, of course, to operate pilot lights, indicators, and other electrical gadgets.

(This compact switch is built by General Controls Co., 612 S. Flower St., Los Angeles 17, Calif. ... or for more information check CP 9111 on handy form, pages 2 & 3.)



Available as normally open or normally closed switch



How SPENCE Cuts Costs of Temperature Control

NEW THERMOSTAT ELEMENT—Improved to practically eliminate loss of filling. Rugged construction; cannot be injured by over-heating.

SECO METAL—Seats and discs are made of SECO Metal—guaranteed not to wire-draw.

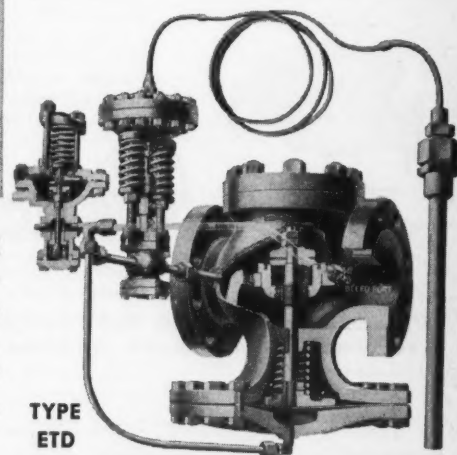
PACKLESS CONSTRUCTION—All Spence main valves and most pilots are built without stuffing boxes. This minimizes friction . . . eliminates much time-consuming maintenance.

PROTECTED SPRINGS—Springs in the Spence Regulator are out of the path of the steam or other fluid flowing through the valve.

LARGE BALANCED DIAPHRAGM—Spence metal diaphragms, under usual conditions, never require replacement.

Accurate Control for Both Storage and Instantaneous Heaters

Spence Temperature Regulators reduce the steam pressure and also accurately modulate the flow as required to control the temperature. No separate reducing valve is necessary • The Spence ET150 Regulator is recommended for heater pressures up to 50 psi. For higher pressures the Type ETD is available • For complete details on the entire Spence line of automatic regulating valves, strainers and desuperheaters, write for Bulletin 1200.



TYPE ETD

Spence

SPENCE ENGINEERING COMPANY, INC.
WALDEN, NEW YORK

When inquiring check CP 9112 on handy form, pgs. 2-3

ROCKWELL

Industrial

METERS

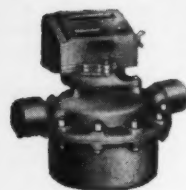
Control Costs . . . Control Formulas



Measuring naphtha in pump room with Rockwell Model ER-12 meter

It's a matter of record!

FOR ALL LIQUID STOCKS, TRANSFERS



Model ER-13—1" connections, with small reset register.



Model ER-17—3" connections with non-reset register.

Rockwell meters provide indisputable records on the quantities of liquids used in batching, blending or processing. From them you can develop basic accounting facts for accurate cost identification—for day-to-day inventory controls. Too, metering at various stages affords an overall record of production efficiency. And metered batches means *no batches*. You get precise control over all liquids entering the formulation.

Rockwell meters fit into and save money anywhere liquids are handled. They are simple, durably constructed and precisely accurate. Mail the coupon or write fully about your measurement needs.



You Can RELY ON ROCKWELL

. . . to accurately measure most any liquid that can be piped—oils, chemicals, paints, liquors, solutions, etc. Complete list sent on request.

SEND THIS COUPON TODAY

ROCKWELL MANUFACTURING CO., PITTSBURGH 8, PA.

Gentlemen:

A5211

I am interested in measuring _____

(Name of Liquid)

Pipe Size _____" Working Pressure _____ psi Temperature _____°F. max.

Max. Flow Rate _____ gpm Min. Flow Rate _____ gpm

YOUR NAME _____

COMPANY _____

STREET _____

CITY _____ ZONE _____ STATE _____

When inquiring check CP 9113 on handy form, pgs. 2-3

PROCESS INSTRUMENTATION

Barium titanate 'ear'
50 times as keen
as tourmaline . . .

piezoelectric crystals are permanently sheathed on cable end

Uses: Piezoelectric element is especially recommended for measurement of transient pressures or listening. Specific applications include transient pressure measurements, explosion studies, geophysical or under water listening. It can also be used as an ultrasonic source.

Features: This element is fifty to one hundred times as sensitive as tourmaline crystals commonly used.

Description: Model BC-1 Transducer is built around a barium titanate cylinder. Actual probe is about 4 1/2" long and 3/4" in diameter. The sensitive element has a bonded coating of neoprene and is also bonded to the graphite coated cable which connects it to its associated instruments. Conducting coating of the cable reduces stray noises.

Able to stand transient pressure up to 10,000 psi, the element generates 0.15 v/psi. Frequency response in the audio range is excellent, being flat from 0.5 cps to about 40 kc.

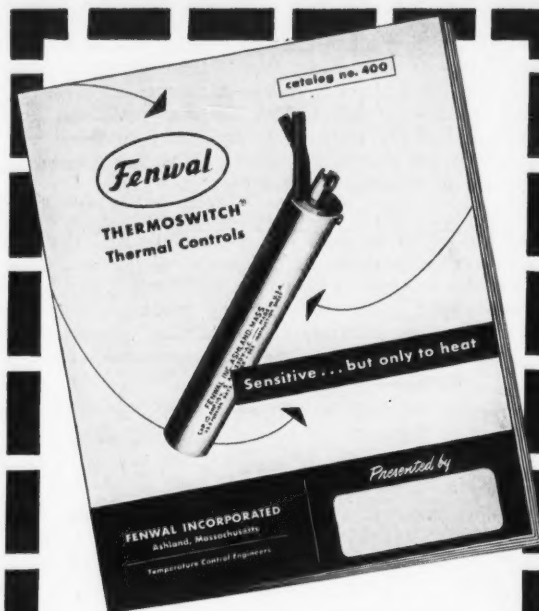
The high (1000 megohm) input resistance stands up under severe conditions. It remained unchanged, for example, after more than two days continuous soaking in salt water. As with other piezo-elements, high temperatures cannot be tolerated. Limit for the BC-1 is 176°F (80°C).

(Produced by Atlantic Research Corporation, Dept. CP, 812 N. Fairfax St., Alexandria, Va. . . or for more information check CP 9114 on handy form, pages 2 and 3.)

Gas analysis problems plus equipment

First outlining the basic principles of gas analysis by the thermal conductivity method, 8-page bulletin then discusses application of manufacturer's equipment to specific problems. Illustrations show the equipment arrangements for the cases presented, which include: analyzing for CO₂ in a combustible mixture, measuring a binary gas by means of an outdoor installed analyzer, and analyzing a gas mixture of a corrosive nature.

On the back of the bulletin is a table of thermal conductivities of some 60 gases. Bul 800-A is issued by Charles Engelhard, Inc., Dept. CP, 850 Passaic Ave., East Newark, N. J. When inquiring specify CP 9115 on handy form, pages 2 and 3.



New Fenwal Catalog

gives you the inside facts about the unique operation of a cost-cutting, multi-purpose thermostat

Find out now how the superior THERMOSWITCH principle of temperature control results in high sensitivity, high load-carrying capacity, low thermal lag, and wide adjustment range. See how the THERMOSWITCH unit assures complete enclosure against dust and dirt . . . high resistance against shock and vibration . . . low cost and ease of installation.

Read the detailed descriptions of different types of THERMOSWITCH thermostat units as used in varied types of applications. Note the application pictures.

If your processes involve control of temperature, humidity, vapor level, radiant heat, pressure or other variables dependent on heat, you owe it to yourself to get your copy of this new catalog today. Fenwal THERMOSWITCH units are unlike any other thermostats. For your free copy, simply write Fenwal, Incorporated, 242 Pleasant Street, Ashland, Massachusetts.

Fenwal

THERMOSWITCH®

Precision, Multi-Purpose Thermostat Controls

SENSITIVE...but only to heat

When inquiring check CP 9116 on handy form, pgs. 2-3

CHEMICAL PROCESSING

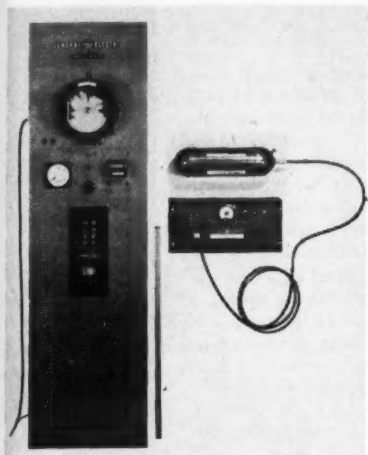
Charts 30-day radiation record, sounds alarm immediately if level gets high . . .

device reacts to gamma or X-ray ionizing potential in the 50 to 1500 kv range

Uses: Monitors an area for ionizing radiation. This radiation (gamma and X-rays in the 50,000 to 1,500,000 volt range) is harmful to human tissue. In addition to keeping a round-chart record showing each 15-minute interval of the period, the instrument sounds an alarm whenever radiation level rises above a preset figure.

Features: Accuracy of measurement is within ± 10 percent and readings may be telemetered to locations as remote as 10 miles away without much loss of accuracy.

Description: Area Health Monitor provides instantaneous indication of radiation, total radiation received



Recording and indicating devices shown at left. Ionization chamber and DC amplifier are at right

in any preset period, and a 30-day integrated record of the radiation present in the vicinity of the detector. This record shows radiation level for each 15-minute interval. Device also contains a means of telemetering the rate of radiation to other remotely located indicating stations.

Unit employs an air wall ionization chamber and DC amplifier. Signal from the amplifier is used to drive a torque balance converter.

Converter produces an AC signal which, in turn, drives the integrating meter, rate indicator, a cyclometer counter and a recording device. Range of the instrument can be set at 5 milliroentgen/hour or higher (up to 50 mr/hr). Normal human tolerance has been set at 6.25 milliroentgen/hour.

Use of the device is not intended to replace normal film badges or ionization chambers carried by workers. It is rather an auxiliary device to sound alarms if dangerous situations occur, and to provide a permanent record to augment personal safety devices.

Power supply is standard 115 v, 60 cps.

(Produced by General Electric Co., Dept. CP, Schenectady 5, N. Y. . . or for more information check CP 9117 on handy form, pages 2 and 3.)

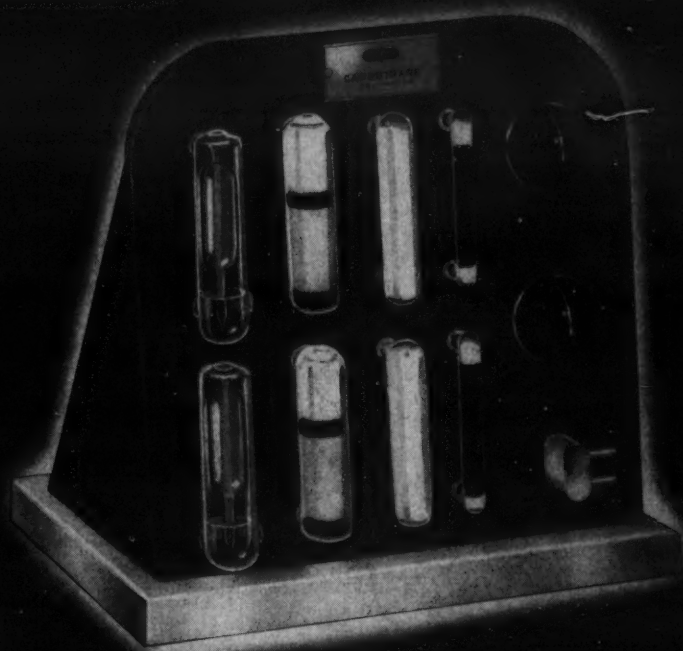
Explains X-ray diffraction as industrial tool

Eight-page booklet is illustrated and printed in two colors. In simple language this booklet explains what X-ray diffraction is and how it can be used in industrial research and testing.

"What is X-ray Diffraction?" is issued by Research and Control Instruments Div., North American Philips Co., Inc., Dept. CP, 750 S. Fulton Ave., Mount Vernon, N. Y. When inquiring specify CP 9118 on handy form, pages 2 and 3.

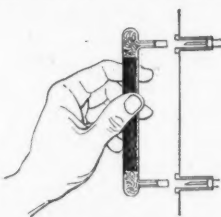
BURRELL CARBOTRANE MODEL 120

*for
Carbons-by-
Combustion*



BURRELL presents the CARBOTRANE*
A UNIT-PACKAGE CARBON TRAIN

Equipped with Unique THROWAWAY Cartridge-Type ABSORPTION TUBES



New, pre-packed, absorption tubes are easily and quickly inserted in Burrell Carbotrane. When spent they are thrown away!

All contacts are leak-proof. The cartridge-type absorption tubes may be stored indefinitely without contamination or deterioration of reagents.

May be used with resistance or high-frequency combustion furnaces

You who are the chemists and technicians of metallurgy, have long expressed desire for a carbon train built into a single piece of laboratory equipment.

Answering this desire, the Burrell Carbotrane is ready to take its place in your laboratory for improved gravimetric determinations of carbons-by-combustion.

The Carbotrane matches, in efficiency, the modern furnaces and analytical balances used. It supersedes the usual assemblies of various parts. Analyses are easier and surer and cost per determination is lower. Built-in timers, with a range up to five minutes, time the periods of combustion.

Because the Carbotrane is leak-proof and contamination-free, errors from these causes are eliminated. It is sturdy and will not tip over.

Two Carbotrane models are available:

MODEL 120—A double train for use with two-tube furnace.

Complete with two sets of absorption tubes . . . \$165.00

MODEL 110—A single train for use with one-tube furnace.

Complete with set of absorption tubes . . . \$110.00

Prices listed are f.o.b. Pittsburgh, Pa. Order today or ask for Bulletin No. 323 for more detailed information.

*Trademark-Patent Pending

BURRELL

BURRELL CORPORATION

2223 FIFTH AVENUE, PITTSBURGH 19, PENNSYLVANIA

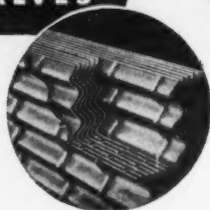
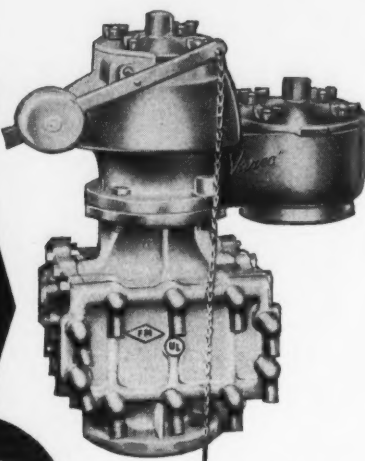
MANUFACTURERS AND DISTRIBUTORS OF SCIENTIFIC APPARATUS AND LABORATORY CHEMICALS

When inquiring check CP 9119 on handy form, pgs. 2-3

WHEN STORING FLAMMABLE LIQUIDS IT PAYS TO BE

EXTRA Safe

with
**"Varec"
FLAME
ARRESTERS**
In combination with your
VENT VALVES



"VAREC" Fig. No. 5800A Vent Unit consisting of "VAREC" Conservation Vent Valve with Flame Snuffer in combination with "VAREC" Flame Arrester.

The belief that conservation vents or breather valves alone will prevent travel of flame back into flammable liquid storage tanks is questionable because of the many contributing factors. Careful authoritative analysis reveals that valves by themselves do provide *some protection* but this "protection" is by *no means adequate*.

Safety authorities emphatically advise that "vent valves are not regarded as providing the required protection against fire and explosion." One textbook on safety states that "a conservative policy is to provide flame arresters in conjunction with other vent equipment on all cone-roof atmospheric tanks handling oils with a flash point up to 200°F open cup."

"VAREC" Flame Arresters when used as a unit with "VAREC" Vent Valves give you full fire protection at extremely low cost. Average installations run approximately 0.1 of 1% of your investment in tank and products. Consult your nearest "VAREC" representative or write for further information.

NF-1



**THE VAPOR RECOVERY
SYSTEMS COMPANY,**

COMPTON, CALIFORNIA, U.S.A.

Offices in all Principal Cities

Cable address: VAREC COMPTON, U.S.A. (ALL CODES)

When inquiring check CP 9120 on handy form, pgs. 2-3

PROCESS INSTRUMENTATION

**Simple adjustment is
feature of redesigned
limit switch . . .**

rotating type devices isn't hurt
by over-travel

Uses: For application where reversing operation is to be coordinated with the number of revolutions of a motor shaft or driven equipment. Can be used to control motor-operated doors and windows, valves on tools, baling operations, travel limits on machinery, etc.

Features: This model supersedes four previous models. All parts are readily reached for easy installation, adjustment and maintenance. Switch cannot be damaged by over-travel.

Description: Rotating type limit switch consists of two Size 2 "Switchettes," each having one normally open and one normally closed circuit. Switch units are operated independently by cams rotated through a worm and gear reduction from a shaft extending outside the case.

Adjustment is made by loosening two clamping screws, turning slotted adjusting pins (one for each cam) to the desired setting, and then retightening the screws. Switch can be adjusted to operate from 4 to 110 turns of the driving shaft with 5 turns over-travel in either direction.

Standard form is housed in zinc die-cast case with removable cover, and measures about 4" square by 2" deep. Water-tight and explosion-proof forms in cast iron cases are also available.

New model is similar in size and shape to the earlier forms, including location of mounting holes. For replacement of certain older types, an adapter bracket is available for mounting the new switch.

(Announced by Control Department, General Electric Company, Dept. CP, Schenectady 5, N. Y. . . or for more information check CP 9121 on handy form, pages 2 and 3.)

**Produces uniform films
of measured thickness
for lab work . . .**

knife reads wet film thickness as it applies material to be tested

Uses: For applying films of known thickness for weathering, corrosion, and similar tests.

Features: Provides direct readings from 0 to 1/4 inch. They may be interpolated to 1/2 mil.

Description: Film Casting Knife is a knife edge and frame with two micrometers which read the height of

Announcing the **DUAL-TUBE**

Something Brand New
in **MANOMETERS**

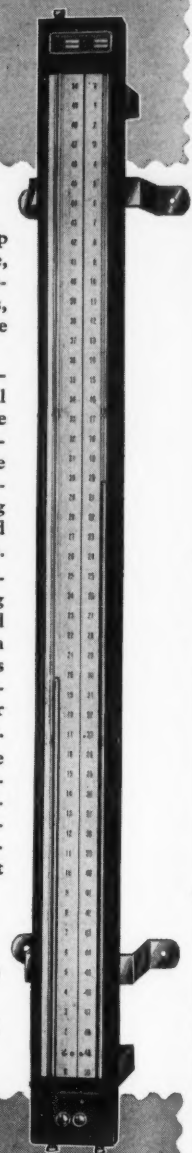
by **MERIAM**

● Now, instead of standing on a step ladder—as when reading long range, single column manometers—the operator can read high range pressures, vacuums, and differentials from the floor level.

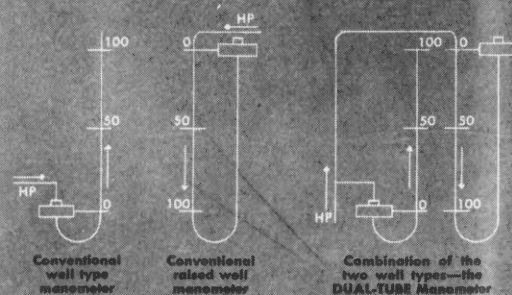
This new manometer development—the DUAL-TUBE, Meriam Model M-100 — consists of two separate manometer tubes in the same case—each tube with individual well. The left tube has a scale increasing upward; the right tube a scale increasing downward. Both tubes are connected in parallel to the same pressure source. The instrument is ideal as a calibrating standard manometer for checking flow meters, pressure gauges, and other secondary units operating on pressure or vacuum principle. It is direct reading. Since both tubes indicate the same reading, the operator can choose the one most convenient. It helps avoid accidents, saves time and effort in reading. Of simple, rugged construction, it is built in accordance with Meriam standards of accuracy and sensitivity for long, reliable service. Ask for Catalog Sheet M-100WM.

**THE MERIAM
INSTRUMENT COMPANY**
10940 MADISON AVENUE • CLEVELAND
2, OHIO

WESTERN DIVISION: 4760 E. OLYMPIC BLVD.,
LOS ANGELES 22, CALIF. IN CANADA: PEACOCK BROS., LTD., MONTREAL



MERIAM DUAL-TUBE MANOMETER.
Available in ranges of 50" to 150".
Patent applied for.

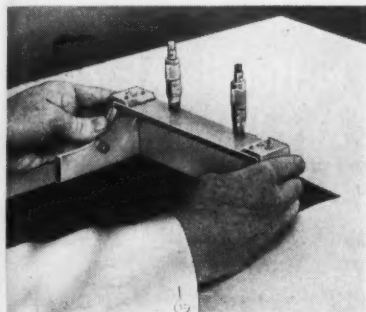


When inquiring check CP 9122 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESS INSTRUMENTATION

the edge from the surface being coated. Two spring members hold the edge up away from this surface. Paint or film material is placed in the well formed by the side members of the



Deposits film of known thickness from 2 to 8 inches wide; up to 1/4 inch thick

frame and the knife. As the device is moved slowly (1 to 2 inches per second) along the surface to be coated, a film is laid down whose thickness can be read on the heads of the micrometers.

In order to check the accuracy of the assembly at any time, it is placed on a sheet of polished ground glass as nearly flat as possible.

With both micrometers set to zero, the glass-knife contact is observed in a strong light. If any gap is evident, the micrometer clamps can be loosened and the knife and micrometers pushed down to make the zero reading correct.

Caster gives direct thickness readings in mils. Readings in the range from 0 to 1/4 inch can be interpolated visually to 1/2 mil. Sizes from 2 to 8 inch widths are made.

(Available from Gardner Laboratory, Inc., Dept. CP, Bethesda 14, Md. ... or for more information check CP 9123 on handy form, pages 2 and 3.)

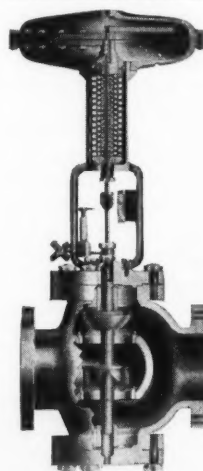
Multi-station alarms guard processes

Covering process variable alarms for liquid level, pressure, temperature, smoke, gas, etc., this bulletin describes several systems. Alarms feature an automatic reset which provides indication until the original condition is corrected.

Bul 7411 is issued by Automatic Control Company, Dept. CP, St. Paul, Minn. When inquiring specify CP 9124 on handy form, pages 2 and 3.

For more information on product at right, specify CP 9125 see information request blank between pages 2-3.

76 BS&B CLIMAX CONTROLS CENTERS



CLIMAX TYPE 86

Diaphragm Control Valve. One of the most widely used controls in the Climax line.



Your Fastest, Most Efficient Service

In 29 states and 3 Canadian provinces 76 BS&B Climax Controls sales and service centers are prepared to meet your needs for fast, efficient, convenient service on automatic controls for regulating flow, levels, temperature, pressure and power. From these centers, including 43 strategically located warehouse stocks of Climax Controls and parts, Climax sales engineers are quickly available to render service on existing equipment or to help you plan new installations.

The widespread, closely integrated Climax organization is a definite assurance that your machinery and processes will function at maximum efficiency and with minimum interruptions when equipped with BS&B automatic Climax Controls.

Climax Controls catalog will be sent to you promptly at your request.

BLACK, SIVALLS & BRYSON, INC.

Climax Controls Division Dept. 4-M-2

7500 E. 12th Street

Kansas City, Missouri

Climax Controls Factory: Tulsa, Oklahoma Oil & Gas Equipment Div: Oklahoma City, Oklahoma

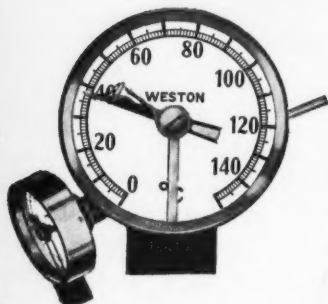
WESTON *Readable* ALL-METAL THERMOMETERS

—AVAILABLE IN THESE **3** TYPES



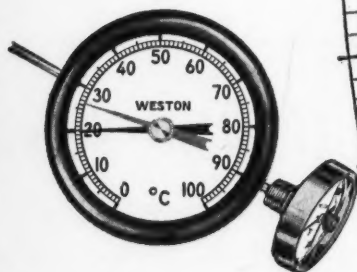
STANDARD INDUSTRIAL THERMOMETERS

All-metal dial types with stainless steel stems, in straight and angle forms. Scale lengths 3"—6" and 9", with stems from 2½" to 72". Available as testing thermometers, and for general purpose and heavy duty service. Ranges from -100 to +1000°F. All-metal construction prevents breakage, assures dependable accuracy for longer periods.



CONTACT MAKING THERMOMETERS

Combines the features of the all-metal indicating thermometer with an alarm or control device. Has adjustable contact arm mounted in the glass and bezel. Supplied to make contact on increasing or decreasing temperatures. Has positive magnetic type contacts. Contact rating . . . 100 ma at 110 volts a-c; 50 ma at 110 volts d-c. Stem lengths 2½" to 24".



MAX-MIN® THERMOMETERS

Equipped with a manually set red index which moves up or down scale with pointer, remaining at extreme temperature reached until reset. Thus one reading gives present temperature, and maximum or minimum reached since last reading. Available in scale lengths of 6" and 9"—stem lengths 2½" to 24".

Literature describing Weston all-metal, as well as electrical and glass thermometers, sent on request. WESTON Electrical Instrument Corporation, 582 Frelinghuysen Avenue, Newark 5, New Jersey . . . manufacturers of Weston and TAGliabue instruments.

WESTON *Instruments*

When inquiring check CP 9127 on handy form, pgs. 2-3

PROCESS INSTRUMENTATION

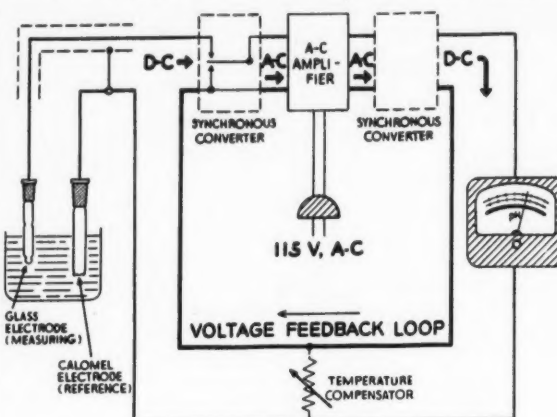
Line operated meter needs no periodic zero adjustment to duplicate pH test . . .

reproducibility of 0.02 pH units is due to the use of inverse feedback in amplifier

Uses: As a pH meter this unit has a full 0 to 14 scale. It can also be used in redox work and Karl Fischer titrations, having millivolt scale of 0 to + 700 or -700 and 0 to ± 1400 .

Features: Use of inverse feedback AC amplifier circuit is evidenced in the inherent stability of the indicator. After a warm up of one minute, it can be standardized and will hold zero adjustment indefinitely.

Description: Inverse feedback has been known to be a great help in maintaining stability and fidelity in amplification. Its use is practically limited to AC circuits, however, and until recently it has not made its

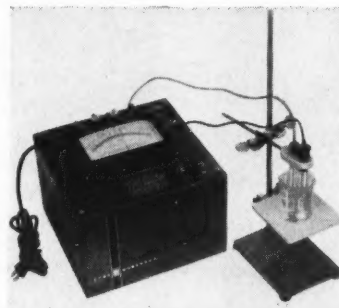


Schematic shows how meter circuit monitors its own reading to suppress errors

appearance in strictly DC phenomena like pH or redox measurement. Circuit shown in illustration is the method used to make the advantages of this scheme available in a practical DC instrument. DC potential from the electrodes is first converted to AC and fed to a sensitive amplifier. Part of amplifier's output is returned, through a second converter in step with the first, so that it cancels out errors due to temperature changes in the amplifier, line voltage fluctuations and other spurious variables.

Results of the improvement can be seen in the performance of the "Stabilized pH Indicator." Though designed for high resistance glass electrodes, the meter can use other types. (Input impedance runs to several thousand megohms.) It can measure pH or electrometric potentials in grounded or ungrounded solutions with equal ease. Line voltage fluctuations between 100 and 130 v do not affect readings. Zero adjustment maintained to ± 0.02 pH units.

A continuous 5½" scale reads from 0-14 pH units. This eliminates scale changing when dealing with solutions



There's a Buffalo NIAGARA METER to Handle Almost Any Volume or Any Type of Liquid:



From $\frac{1}{30}$ to
1000 gallons

per minute can
be metered by
NIAGARA Meters.
Sizes range from
½" to 6" diameter.

For Oils,
Chemicals,
Cold or
Hot Water,
and Other
Liquids



Please send us information on the
complete line of Niagara Meters.

Liquid _____ Temp. _____ °F
Flow gpm. _____
Name _____
Company _____
Address _____

BUFFALO METER CO.

2892 MAIN STREET
BUFFALO, N. Y.

When inquiring check CP 9128
on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESS INSTRUMENTATION

whose pH may be on either side of 7. Meter action is critically damped so that a steady reading is obtained in about 1.5 seconds in most tests. The $10\frac{1}{2} \times 10\frac{1}{4} \times 8\frac{3}{8}$ " indicator has only two controls and one switch. One of these controls is a manual temperature compensation running from 0 to 100°C in 2° increments. Special units are available for power supplies other than 115 v 60 cps.

Manufacturer can also supply electrodes, accessories and buffer solutions.

(Designed and built by Leeds & Northrup Company, Dept. CP, 4901 Stenton Ave., Philadelphia 44, Pa. . . or for more information check CP 9129 on handy form, pages 2 and 3.)

Very high gain and stability make amplifier suitable for precise work . . .

use of this amplifier can eliminate need for delicate suspension galvanometers in minute measurements

Uses: Generally speaking, the amplifier handles microvolt and fractional microvolt AC or DC. It has been used in precise temperature measurement, optical pyrometry, spectroscopy, measurement of nerve potential and other similarly exacting tasks.

Features: Gain stability and zero drift are excellent; gain changed less than 0.3% in eight hours (with stable power line); zero drifted only 0.005 microvolts in eight hours.

Description: Model 14 Breaker Amplifier uses a synchronous input converter and output rectifier. Since the signal within the amplifier is AC, it can and does use inverse feedback. This is one of the major factors in its stability. Among the other important reasons for this stability is the fact that the signal frequency, created by the converting input breaker is, 8 cycles per second.

By limiting response of the amplifier to a narrow band around 8 cycles, the amplifier is able to discriminate against 60 cycle "pick-up" with a 1000:1 signal-to-noise ratio. Actually this amplifier has been used in ultra-sensitive Wheatstone and Mueller bridges without any additional shielding required. Because of its low frequency sensitivity, however, only AC of very low frequency can be handled.

While not critical, matched input impedance is very important to proper operation. Circuit will tolerate mismatching by a factor of four without appreciable change in the signal-to-noise ratio. An amplifier designed for a 20 ohm source, for instance, will work effectively with any source of from 5 to 40 ohms. It will, of course, operate with sources far outside this impedance range, but with a corresponding decrease in gain and signal-to-noise ratio. Source impedance should be specified in ordering the amplifier.

Gain control is provided by a coarse adjustment (20-position switch, 4 db/position) and a fine control for interpolation of these levels. There are also seven test signals for calibration. Signal range runs from 0.1 to 100 microvolts. At maximum gain the amplifier is linear to about 0.3 microvolts. Output, in this case, is 17 volts when working into an open circuit, about 5 volts when loaded with 500 ohms.

(Developed and built by Liston-Becker Instrument Co., Inc., Dept. CP, Stamford, Conn. . . or for more information check CP 9130 on handy form, pages 2 & 3.)

FEBRUARY, 1952



New screw type thermocouple head with cover removed, showing single terminal block. Interchangeable duplex terminal block shown below.

NEW screw type thermocouple head

... now available through your



Here's a new Brown Screw Type Thermocouple Head that *cannot rust or freeze* . . . another plus value in the HSM Plan for convenient and economical purchasing of pyrometer supplies.

This unit effectively safeguards terminal connections from corrosive effects of high temperatures and extreme weather conditions.

Versatile: it accommodates single and duplex thermocouple, and resistance thermometer, terminal blocks . . . is interchangeable with other heads . . . and permits installation of twin thermocouples with a single head.

Thus, your inventory of thermocouple heads is materially reduced.

Threads on the inside of the head . . . plus plating and enameling *after* machining . . . prevent freezing and rusting.

Call your local Honeywell Supplies Man for prices and delivery information, and for details on the HSM Plan for all your pyrometer supplies purchases . . . he is as near as your phone.

MINNEAPOLIS-HONEYWELL REGULATOR CO., Industrial Division, 4421 Wayne Ave., Philadelphia 44, Pa.

MINNEAPOLIS
Honeywell
BROWN INSTRUMENTS



● Important Reference Data

Write for a copy of New Pyrometer Supplies Buyers' Guide, No. 100-4

First in Controls

When inquiring check CP 9131 on handy form, pgs. 2-3

PROCESS INSTRUMENTATION

Water temps from 188° to 208° F relieved by valve . . .

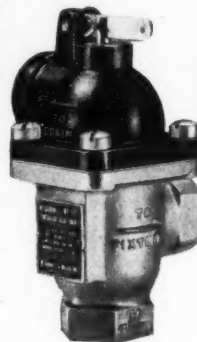
thermostatic element has a life of approximately 10,000 cycles

Uses: Relieve temperatures in hot water tanks and heaters.

Features: Excessive temperature will not damage the operating element or cause any variation in calibration; also, changes in barometric pressure do not affect operation. All parts of valve which are constantly in contact with water are non-ferrous.

Description: Operating heart of McDonnell No. 201 temperature relief valve is a thermostatic element consisting of a mixture of organic and metallic particles. This element responds to variations in temperature by expansion and contraction, and the forces thus created serve to open and close the valve orifice.

Valve starts to open at 188°F and reaches its maximum capacity at 208°F. It reseats itself automatically and closes off at just a few degrees below the opening temperature — test results indicate drip-tight closure occurring at 183°F. Fatigue tests show that element has a life expectancy of about 10,000 cycles.



Valve is suitable for operating pressures up to 125 psi. Connections of the McDonnell No. 201 are all 3/4" tappings and its shipping weight is 3 lb.

(Manufactured by McDonnell & Miller, Inc., Dept. CP, 3500 N. Spaulding Ave., Chicago 18, Ill. . . or for more information check CP 9133 on handy form, pages 2 and 3.)

Space heating control watches indoor temp and weather . . .

by anticipating demand, unit holds lag to a minimum

Uses: Heating control is used with all types of heating systems including radiant heating. Any type of fuel may be used.

Features: Control system embodies both indoor and outdoor temperature elements. By predicting heating needs from weather changes,

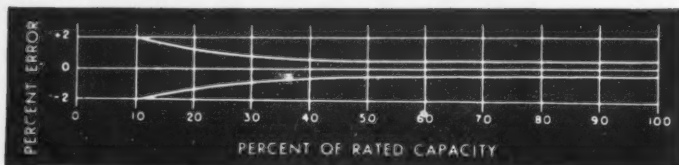
When the question is

pounds

here's the answer



For continuously weighing bulk dry material carried on a conveyor belt, one meter is outstanding — Builders Conveyoflo. Conveyoflo weighs in transit. It keeps an accurate, continuous weight tally whether the material is tobacco (at 4 lbs. per cu. ft.) or nickel ore (at 175 lbs. per cu. ft.). Conveyoflo serves in food plants, power plants, refineries, tobacco plants, paper mills, fertilizer factories, sewage disposal plants, and many other major processing installations.



ACCURATE . . . within $\pm \frac{1}{2}$ of 1% of actual weight from maximum to 50% of rated capacity; within 1% from 50% to 25% rate; and within 2% from 25% to 10% of the rated capacity of the scale.

AUTOMATIC TOTALIZER COMPENSATION for variations in BELT SPEED and changes in BELT WEIGHT.

RESPONDS ACCURATELY to rapid load variations.

AUXILIARY FEEDERS, automatically paced for continuous blending processes, may be furnished.

SECONDARY INSTRUMENTS, Rate of Flow Indicators, Recorders, or Indicator-Record-

ers can be located at the Totalizer Head or remotely.

BATCH COUNTERS, Automatic Reset Counters, operated from electrical contacts in Totalizer Head, are available.

Yes, Conveyoflo Meter gives you the answers to your continuous weighing and blending problems in POUNDS, not GUESSES. For new Bulletin 550-H4, address Builders-Providence, Inc. (Division of Builders Iron Foundry), 387 Harris Ave., Providence 1, Rhode Island.

BUILDERS PROVIDENCE
Instruments

Instruments for recording, indicating, and controlling flow, liquid level, pressure, and weight. Chlorinizers — chlorine gas feeders.

When inquiring check CP 9132 on handy form, pgs. 2-3

CAMBRIDGE GAS ANALYZERS

Labor saving — profit producing!

Cambridge Gas Analyzers continuously analyze and simultaneously record on one chart from one to six constituents of a gas. They may be used for most simple and many complex mixtures of gases. Dependable and labor-saving, these Analyzers make possible increased efficiency and savings in the operation of steam generating plants, cement kilns, blast furnaces; in the production of inert gases; in metallurgy, in petroleum refining and other chemical processes.

Send for literature mentioning application

3-POINT RECORDING GAS ANALYZERS
(CO₂, H₂, CO)

CAMBRIDGE INSTRUMENT COMPANY INC.

3706 Grand Central Terminal, New York 17, N.Y.

PIONEER MANUFACTURERS OF PRECISION INSTRUMENTS

When inquiring check CP 9134 on handy form, pgs. 2-3



NOW! Up to 6 Records of pH on one round chart!

● With but one instrument and one pH amplifier, records of as many as six pH measurement points may now be obtained on a single round chart. This means initial savings as high as 60% or more, as well as greatly simplified installation. The instrument which makes this possible is the new and altogether unique Foxboro Multi-Record Dynalog® Electronic Recorder. Supplied with flow-type or immersion-type electrodes. Foxboro Recording Controllers also available.

The Foxboro Company, 1902 Neponset Ave., Foxboro, Mass., U.S.A. Branches in principal cities.

*Reg. U.S. Pat. Off.

FOXBORO pH RECORDERS
Reg. U.S. Pat. Off.

When inquiring check CP 9135 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Save Time, Labor, Dollars!



TEST • STUDY • CONTROL
VISCOSITY

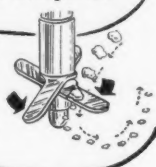
As Simply, Quickly and Easily
as Taking Temperature Readings

Just a flick of a switch, then read the Brookfield dial, and you have your viscosity determination in centipoises. The whole operation, including cleaning up, usually takes *less than a minute*.

Available in a variety of models suitable for extremely accurate work with both Newtonian and non-Newtonian materials, Brookfield Viscometers are portable and plug in any A.C. outlet — *can be used in Lab, Plant or both*.

Write today for fully illustrated catalog showing Brookfield Viscometers adaptable to any viscosity problem from *less than one to 32,000,000 centipoises*.

BROOKFIELD COUNTER-ROTATING MIXER — Two concentric, oppositely rotating shafts, propeller equipped and driven by two motors, produce an annular flow and up to 48,000 scissor-like cuts/minute. Enable exceptionally fast, effective and efficient laboratory mixing. *Not a "stirrer"*. Write for Brookfield MIXER brochure.



Brookfield ENGINEERING LABORATORIES, INC.
101 Porter St., Stoughton, Mass.

When inquiring check CP 9136 on handy form, pgs. 2-3



**All-Electric
Floatless**

LIQUID LEVEL CONTROLS

● Write for latest catalog covering the complete line of B/W Induction Relays, Induction Relay Switches, Relay Enclosures, Contactors and Starters, Multiple Pump Controls, Electrode Holders, Starter and Relay Combinations, Special Controls and Panels.

Controls will never trouble you, when you buy B/W

B/W CONTROLLER CORPORATION
2204 East Maple Road, Birmingham, Michigan

FIRST IN THE FLOATLESS CONTROL FIELD

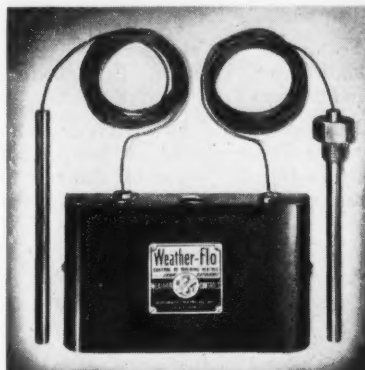
When inquiring check CP 9137 on handy form, pgs. 2-3

FEBRUARY, 1952

PROCESS INSTRUMENTATION

the controller holds lag and overshooting to a minimum.

Description: Completely adjustable on the job for different heating system design temperatures, different operating temperature ranges, minimum temperatures, and heat cutoffs,



Controller uses both indoor and outdoor temperature elements

Weather-Flo is a universal unit. An outdoor weather element in combination with a temperature measuring bulb in the heating system controls rate of heat flow according to weather changes. Actual controlling element is a fan or pump switch. Heating lags caused by over- and undershooting are eliminated, bringing the heating system to its best efficiency.

Adjustment on the job is made by four dials calibrated in actual temperature settings. The control unit will operate with any type of fuel.

(Product of Automatic Devices Co., Inc., Dept. CP, Western Springs, Ill. . . or for more information check CP 9138 on handy form, pages 2 and 3.)

**Gives information
on radiation**

Essential information on ten recent nuclear radiation detectors is revealed in this eight-page, two-color bulletin.

Illustrated booklet covers: radiation monitor, scintillation counter, portable radiation probe, area health monitor, long-probe gamma survey meter, alpha hand counter, air equivalent ionization chamber, boron-coated counter tube, thermocouple vacuum gage, and the stepmotor impulse counter.

Instruments are designed for use in industry, hospitals, laboratories and civil defense work.

Bul GEA 5735 is issued by General Electric, Dept. CP, Schenectady, N.Y. When inquiring specify CP 9139 on handy form, pages 2 and 3.



**Humidity
"ENGINEERED
TO ORDER"**

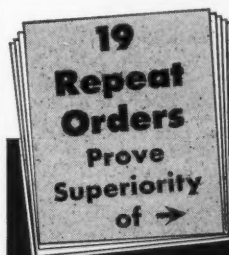
**Gives Giant Upjohn Plant "New Concept of
Air Conditioning" with Precise, Dependable,
Low Humidities**

Penicillin! Streptomycin!...Kathabar equipment helps manufacture these wonder drugs, gives low humidities to speed production and maintain product quality. Many processes work better with the proper low humidity, accurately and precisely controlled.

"Kathabar equipment has given us a new concept of air conditioning", said one executive of the nationally famous Upjohn Company.

This precise, dependable control is being adopted enthusiastically by America's drug manufacturers.

Don't overlook humidity in your own plant, one of the basic factors in air conditioning.



"Humidity Engineering"
with the Kathabar System

Another large pharmaceutical house during the last six years has purchased 24 Kathabar units. Kathabar helps produce America's drugs uniformly, inexpensively, consistently.

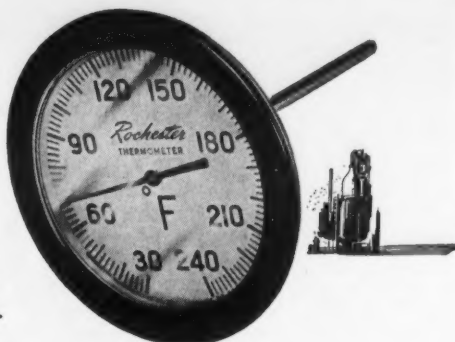
★ Send for further Kathabar information today on your company letterhead.

SURFACE COMBUSTION CORPORATION, TOLEDO 1, OHIO

KATHABAR DIVISION

When inquiring check CP 9140 on handy form, pgs. 2-3

More
corrosion
resistant!



Rochester all stainless steel thermometers permit wide range of service.

A new stainless steel welding process bonds case, stem and plug into one solid stainless steel unit. This means extra dependability under a wide range of service.

Rochester's famous bimetallic element will not "tire" or lose its accuracy. And a superior dampening forever eliminates pointer "lock-up."

Backed by 35 years of manufacturing experience, the new Rochester Dial Thermometer is your best bet for heavy-duty service.

ORDER TODAY from your Rochester Representative or write Rochester Manufacturing Co., Inc., 86 Rockwood Street, Rochester 10, New York.

Rochester

Manufacturing Company, Inc.
86 Rockwood St., Rochester 10, N. Y.



DIAL THERMOMETERS GAUGES AMMETERS

When inquiring check CP 9141 on handy form, pgs. 2-3



Recently Developed

3-WAY FULL AREA, PACKLESS
SOLENOID VALVES

PIPE SIZES: 1, 1 1/4, 1 1/2 and 2 inches

We recommend this valve for controlling equipment where pressure must be alternately applied and exhausted as, for example, with diaphragm motor valves, air or hydraulic cylinders, etc. Classed as Bulletin 8331 ASCO Valves, here are a few specifications: maximum pressure 125 to 250 pounds; minimum pressure 10 to 20 pounds. Suitable for handling air, water, gas, oil and other non-corrosive gases or liquids up to 180°F.

Since the automatic control of any alternating application and release of pressure is so important for efficient operation, we suggest that you bring your problems to the attention of our engineers whose experience goes back nearly 40 years.

If you have recurrent and varying needs for automatic control valves, you should have our General Valve Catalog No. 23.

When in need of Automatic Transfer Switches, Remote Control Switches, Contactors, Relays, and Specialized Electromagnetic Controls, come to us.

Automatic Switch Co.
379 LAKESIDE AVENUE • ORANGE, NEW JERSEY

V-51-6

When inquiring check CP 9142 on handy form, pgs. 2-3

PROCESS INSTRUMENTATION

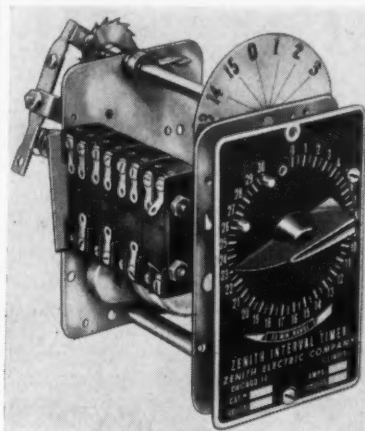
**Controls start, stop
of many operations
showing stage . . .**

timer controls electric circuits,
indicates step-by-step progress

Uses: Timing and controlling
(on-off) electrical equipment. Timer
also shows stage of operations.

Features: Dial, part of timer,
shows up to 15 steps. Dial position
indicates stage of operations.

Description: This Indexing In-
terval Timer can be set for periods
up to 30 min. Operator can tell, at
any time, just how far along the



Controls four circuits

sequence has progressed. He can
reset the timer while running, if
need be. Up to four switching cir-
cuits can be provided. Each has a
maximum rating of 10 amp at 110 v
AC (non-inductive).

(Product of Zenith Electric Com-
pany, Dept. CP, 152 W. Walton St.,
Chicago 10, Ill. . . or for more in-
formation check CP 9143 on handy
form, pages 2 and 3.)

Color control factors in paper making

Enumerated in this 9-page paper are
the many factors which may influence
the color of the final sheet in the mak-
ing of paper. It also contains certain
suggestions for control of these fac-
tors. Among the items considered
are: use of the proper dyes, elimina-
tion of the possibilities of contamina-
tion, importance of time and tem-
perature control, and suggestions on
judging shades.

Calco Technical Bul 824 is issued by
American Cyanamid Co., Calco Chem-
ical Division, Dept. CP, Bound Brook,
N. J. When inquiring specify CP
9144 on handy form, pages 2 and 3.

**no
coddling
pul-leeze**

STACON TEMPERATURE
REGULATOR* *Patented

You can install a Farris Stacon Temperature Regulator and forget all about it. You know it will operate positively and accurately under all conditions and at all times.

The Farris Stacon Temperature Regulator is dirt-proof, trouble-free. It operates with unheard of accuracy—to within plus or minus 1 deg. And that's not just under ideal circumstances. It functions with identical accuracy in the worst possible surroundings—provides air-operated sensitivity at self-operated cost.

Here's why: In patented Stacon Regulators, there are no packing glands to leak or bind. The liquid in the bulb flashes to vapor in the power bellows, providing hair-trigger response to move the valve disc.

You'll want complete details on this accurate and economical temperature regulator. Write for Stacon Bulletin 50-100.

Farris Stacon Corporation

506 COMMERCIAL AVE. PALISADES PARK, N. J.

When inquiring check CP 9145 on handy form, pgs. 2-3

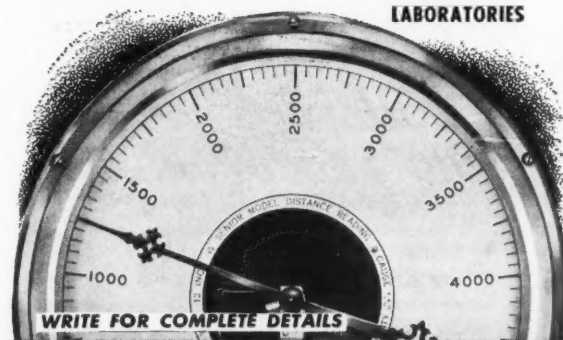
**"LIQUIDS WORTH STORING
ARE WORTH MEASURING"**

with a

LIQUIDOMETER

- FOR GAUGING LIQUIDS
OF ALL KINDS
- 100% AUTOMATIC
- APPROVED BY
UNDERWRITERS'
LABORATORIES

Tank Gauge



WRITE FOR COMPLETE DETAILS

THE LIQUIDOMETER CORP.
38-18 SKILLMAN AVE., LONG ISLAND CITY, I.N.Y.

When inquiring check CP 9146 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESS INSTRUMENTATION

**Indicates true temperature
but control action
is proportional . . .**

proportional control action takes place in controller section and does not affect temperature reading

Uses: Controls and indicates temperatures in situations where fluctuations must be held to a minimum. Currently used in many plastic injection molding installations as well as in general chemical plants, heat treating works, and extruding operations.

Features: Proportional control is applied through a separate controller section. Indicated temperature is not depressed by the action, so true temperature can be read.

Description: Model JP Gardsman Proportioning Controller automatically adjusts the ratio of power "on" and "off" portions of the cycle. Comparison of graphs (shown) bears out reports that this unit prevents over-



On-off control contrasted with proportional control of this instrument

shooting and provides a steady controlled temperature. Use of a controlled cycling proportional to load and allowing for lag and thermal inertia is reported to anticipate temperature changes in conventional applications.

Model JP is available in 36 standard scale and thermocouple ranges covering the temperature band from 0 to 3000°F. Lowest standard scale is 0 to 250°F. Either 110 or 220 v 60 cps can be used as power.

(Developed by Taco West Corporation, Dept. CP, 525 N. Noble St., Chicago, Ill. . . or for more information check CP 9147 on handy form, pages 2 and 3.)

Pneumatic amplifier in transmitter makes it a control device

Pneumatic transmitter occupies about one cubic foot and does the work of a transmitter and controller. Pneumatic amplification produces a usable signal (output pressure) of 3 to 15 psi when variable changes as little as 1 to 3 inches of water in pressure. Other output pressure ranges are available, too.

Two-color, four-page bulletin explains operation of the device with clear text and photographs, schematics and graphs. Full dimension data is given in engineering drawings. Bulletin points out the versatility of this controller-transmitter by stating that it may be used to measure and control pressures up to 3000 psi. Since it uses very short lines and no mercury, it tends to be fast acting and stable.

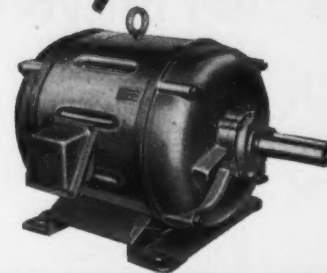
Bul 154 is issued by Askania Regulator Company, Dept. CP, 240 E. Ontario St., Chicago 11, Ill. When inquiring specify CP 9148 on handy form, pages 2 and 3.

FEBRUARY, 1952

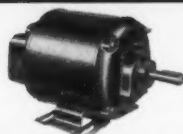
Wagner
ELECTRIC MOTORS
... the choice of leaders
in industry

Wagner Quality Motors for your product or your plant

When you select a motor from Wagner's complete line, you get a motor that is completely dependable in its specific application. You can choose from a wide variety of types and sizes. Here are a few of the motors in the Wagner line. At right is TYPE RP—open type polyphase squirrel-cage motor. It is drip-proof and suitable for all general purpose applications. 1/6 to 400 hp.



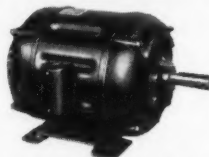
SINGLE-PHASE



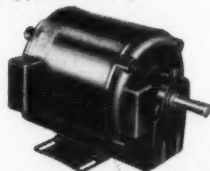
TYPE RB—Split-phase Induction. For easy starting applications with high starting current. 1/20 to 1/2 hp.



TYPE RK—Capacitor-Start Induction. For general purpose applications requiring high starting torque—normal starting current. 1/6 to 3 hp.

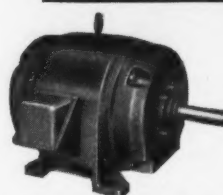


TYPE RG—Repulsion-Induction. For high starting torque applications involving a very long starting period. 1 to 5 hp.

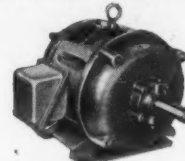


TYPE RA—Repulsion-Start Induction. For general purpose applications with high starting torque—low starting current. 1/2 to 15 hp.

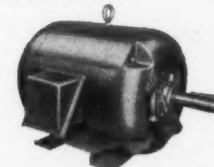
POLYPHASE MOTORS



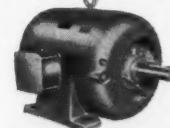
TYPE XP—Splashproof. Protected against splashing or dripping liquids. 1/4 to 200 hp.



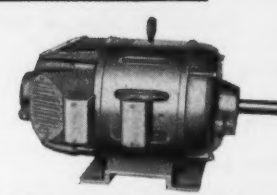
TYPE TP—Totally-enclosed, non-ventilated. Fully protected. 1/4 to 15 hp.



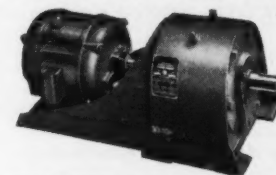
TYPE CP—Totally-Enclosed Fan-Cooled. Protected against dirt, chips, abrasives or fumes. Steel frame. 1 to 250 hp. Also in explosion proof type RP.



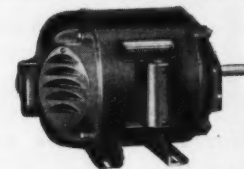
TYPE EP—Corrosion-resistant Totally-Enclosed Fan-Cooled. Cast iron frame. 2 to 250 hp. Also available in explosion proof type RP.



TYPE RS-1—Wound Rotor. Constant or adjustable varying speed. 1 to 250 hp. TYPE RS-2 for intermittent service. 2 to 200 hp.



GEAR MOTORS—Single-phase or Polyphase. Open or enclosed types. 1/20 to 50 hp.



DIRECT CURRENT MOTORS—Companion line to Wagner A.C. Motors. 1/6 to 3 hp.

In addition to a complete line of motors, Wagner also furnishes Increment Type Motor and Starter Combinations, Jet Pump Motors and a complete line of Transformers: Dry-type, Distribution and Power. Wagner engineers welcome an opportunity to serve you. Consult the nearest of 32 Branch offices, or write direct.

Wagner
Electric Corporation
EST. 1891

WAGNER ELECTRIC CORPORATION
6359 Plymouth Ave., St. Louis 14, Mo., U.S.A.

ELECTRIC MOTORS • TRANSFORMERS • INDUSTRIAL BRAKES
AUTOMOTIVE BRAKE SYSTEMS — AIR AND HYDRAULIC

BRANCHES IN 32 PRINCIPAL CITIES

When inquiring check CP 9149 on handy form, pgs. 2-3

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STANDARDIZED AND STOCKED FOR PROMPT DELIVERY



Selection of
FLOWRATOR
Meters and other
F&P flow-rate
instruments
simplified

Standardization of F&P indicating instruments permits quantity manufacture, lower costs, and quicker deliveries.

You can now select flow meters from catalog data to meet your immediate requirements. Engineering charges and manufacturing delays are eliminated.



WRITE FOR NEW
"STOCK FLOW METER"
BULLETIN

Contains complete data, sizes, and prices with illustrations of F&P instruments now stocked. It lists all F&P sales engineering offices showing which offices carry stock meters.



FISCHER & PORTER CO.

DEPT. 2M-9E

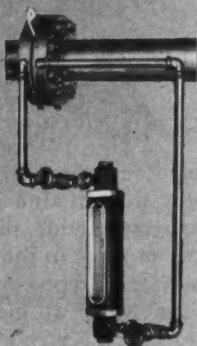
HATBORO, PENNSYLVANIA, U. S. A.

PROCESS CONTROL INSTRUMENTS

FLOWRATOR
accurate flow
measurement
meters



ORI-FLOWRATOR
high-capacity
by-pass meters



RATOSIGHT
Flow Indicators



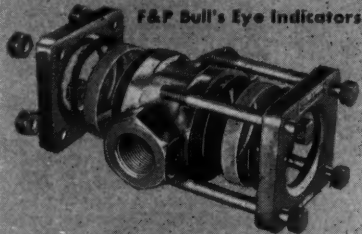
MAGNASIGHT
Flow Indicators



"C-CLAMP"
FLOWRATOR
Meters



F&P Bull's Eye Indicators



Laboratory
Flow Test
Kits



PROCESS INSTRUMENTATION

**Convenience of use
is key factor
in design . . .**

power supply is well suited for electrochemical lab work

Uses: Electrochemical laboratory power supply. Can be used for any low voltage, moderately high current work where electrical power must be controlled.

Features: Several convenient features such as timer, AC outlets, stepless control, etc., make the supply versatile and easy to use.

Description: This selenium rectifier operates on 110 v, 60 cps AC. Two output ranges are built into the unit. Both are continuously variable from zero to full voltage. The 0 to 18 v taps can furnish 6 amp; 0 to 15 v taps furnish up to 30 amp. Ripple is reported held to a minimum and unit may be operated continuously at its ratings.

A built-in five-minute interval timer may be switched in or out of the circuit. It can be stopped manually. Two 110 v AC outlets are provided for convenience in operating auxiliary equipment.

Unit is 15 x 12 x 9 1/2" high.

(Product of R. O. Hull & Company, Inc., Dept. CP, 1300 Parsons Court, Rocky River 16, Ohio . . . or for more information check CP 9151 on handy form, pages 2 and 3.)

**Polyethylene bottle
with flexible spout
holds mercury . . .**

squeeze-to-dispense action avoids air contamination

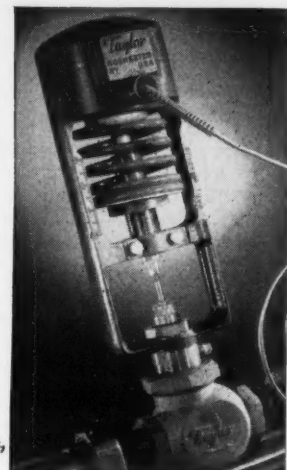
Uses: Mercury in polyethylene bottle is suitable for instrument use (manometers, polarographs, thermometers, cathodes cells, et al.)

Features: Mercury is described as being better than reagent grade—special container is designed to handle it so that it remains at that purity.

Description: "Instrument Mercury" is supplied in 5 lb (or larger) polyethylene bottles. Mercury is very pure; contaminants amounting to only a fraction of one part per million. Bottle is dust-proof and dispenses mercury through a flexible tube when it is squeezed. This action keeps transfer and air contact contamination at a minimum.

(Supplied by Bethlehem Apparatus Company, Inc., Dept. CP, Front and Depot Streets, Hellertown, Pa. . . . or for more information check CP 9152 on handy form, pages 2 and 3.)

GOOD WORK HORSE FOR SALE



YES, this "horse" works 24 hours a day, never gets sick, and never needs feeding. It's the rugged, dependable, accurate Taylor Self-Acting Temperature Controller. Simple in operation—and practically no maintenance necessary. No auxiliary air supply required.

Perfect where compressed air or electricity aren't available—on processes involving no extreme load changes. Jobs like; open tanks, peelers, sterilizers, hot water storage tanks, etc.

Double seated valves available up to 2"; single seated composition disc types up to 1". Numerous standard temperature ranges within 10° to 340°F., and semi-standard temperature ranges within 165° and 610°F. The Taylor Self-Acting Temperature Controller is one more way Taylor can help keep quality up and costs down for you. Ask your Taylor Engineer or write for Catalog 36-R. Taylor Instrument Companies, Rochester, N. Y., and Toronto, Canada. Instruments for indicating, recording and controlling temperature, pressure, humidity, flow and liquid level.

TAYLOR INSTRUMENTS MEAN "ACCURACY FIRST"

When inquiring check CP 9153 on handy form, pgs. 2-3

where performance
of product or process
demands
dependable timing

Cramer



Widely used in industrial controls for heat treating, for the control of plastic and injection molding, lapping, induction heating, mixing and agitation, purging gas fired ovens, etc. — where accuracy of timing improves quality, reduces supervision or vitally protects the process or equipment itself — the Cramer Type TEC Time Delay Relay provides an adjustable time delay between the operation of a control circuit and the subsequent closing or opening of a load circuit. Designed for dependable, trouble-free service . . . compact construction . . . extremely accurate.

For complete details of the Type TEC — and other dependable Cramer timing instruments — send today for copy of new Cramer Catalog.

the R. W. CRAMER CO., Inc.
BOX 9, CENTERBROOK, CONN.

When inquiring check CP 9154 on handy form, pgs. 2-3

CHEMICAL PROCESSING

When inquiring check CP 9150 on handy form, pgs. 2-3

Samples and tests contents of any closed system every 3 minutes . . .

unattended instrument runs viscosity tests and may be used as a process controller

Uses: For process records or control where viscosity is an index of process happenings. Recorder can also be used for checking materials flowing in pipes.

Features: Instrument requires no operator — it handles whole test, from taking sample to recording results, unattended.

Description: Automatic Sampling Viscometer is the most recent of a series of similar instruments made by this manufacturer. Present unit can take samples as small as 25 cc; can take them as frequently as every three minutes. It can be installed on pipelines for checking the material flowing, or on tanks and other process equipment.

Alarm system makes it especially suitable for catching the endpoint of a batch process. Instrument is regularly supplied with two alarms — high and low. When used in a batch process, however, one alarm can be set to show an approaching endpoint while the other indicates when the point has been reached. This gives the operator a chance to be ready for the crucial moment without requiring him to spend the last several minutes waiting for it. Automatic control units can also be furnished to work with this instrument.

(Announced by Norcross Corporation, Dept. CP, Newton 58, Mass. . . or for more information check CP 9155 on handy form, pages 2 and 3.)

Method of measuring pulsations brought to light by medical research . . .

problem of measurement of high frequency components of human pulse is not unlike that of pipeline

Pulsations of fluid in pipelines can be important in metering. They are also a factor in operations where a viscous liquid is being forced through a small orifice, as in spinning operations. In a recent paper by Delmas C. Little, an ingenious device developed for measuring high frequency components of the human pulse was described. This Gregg manometer is simple, yet has advantages in frequency response and extremely small disturbance to the system.

The manometer is constructed by leading a small ($\frac{1}{8}$ " ID) tube from the pressure source to some accessible point. A mica or rubber diaphragm is cemented over the end of this tube. For an indicating element, a very small mirror is cemented to the diaphragm, just off center. All bubbles should be removed from the tube to keep frequency response high. In order to record pulsations, light is directed on the mirror and the reflection is picked up by a recording camera. A simple screen would do where amplitude alone is the prime consideration.

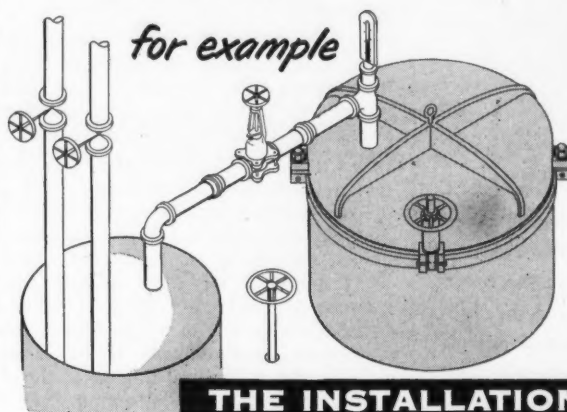
In working with large pipes, a larger diaphragm could be used. With small or delicate systems, however, the smaller instrument is found to give accurate and useful results without lowering transient pressures by the load it imposes.

(Gregg manometer is described in "Research vs Industrial Instrumentation," by Delmas C. Little. This paper was presented at the Houston Instrument Show last September and is available to non-members of ISA. Remit 50c direct to Instrument Society of America, Dept. CP, 921 Ridge Ave., Pittsburgh 12, Pa.)

FEBRUARY, 1952

Is Corrosion Your Valve Problem?

...on Acid Solutions Like This,



In acid dye line to package dye machine at Phoenix Dye Works, Chicago, Ill.

THE HISTORY

Various valves and cocks previously tried in this service gave much trouble with leakage and sticking, needing excessive maintenance and lasting only 1 to 2 months at best. Valve almost constantly in contact with varying acid dye solutions at temperatures ranging from 50 to 210 degrees F. Operated about 100 times daily, often with disc in throttling position.

Since installing a Crane No. 18850 all 18-8 Mo Stainless Steel Plug Gate Valve—more than 3 years ago—user reports: no leakage through valve . . . no sign of corrosion . . . no maintenance expense . . . unusually easy operation. Highly enthusiastic about Crane Plug Gate Valves.

The Complete Crane Line Meets All Valve Needs. That's Why,
More Crane Valves Are Used Than Any Other Make!

CRANE VALVES

CRANE CO., General Offices: 836 S. Michigan Ave., Chicago 5, Illinois
Branches and Wholesalers Serving All Industrial Areas

VALVES • FITTINGS • PIPE • PLUMBING • HEATING

When inquiring check CP 9156 on handy form, pgs. 2-3

VALVE SERVICE RATINGS

SUITABILITY:

O.K. for acid dye solutions

MAINTENANCE COST:

None; lubrication only

CORROSION-RESISTANCE:

Excellent; no sign of corrosion

SERVICE LIFE:

Good as new after 3 years' Constant service

OPERATING RESULTS:

No leakage; no production loss easier valve operation

PRICE:

In line with good alloy valves

AVAILABILITY:

Regular item in Crane alloy line

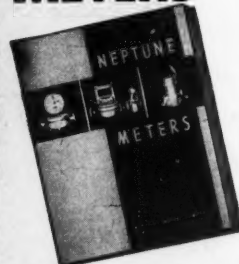
THE VALVE

One of the finest in the Crane line for corrosive service—No. 18850 Plug Gate—with 18-8 Mo stainless steel in all parts exposed to flow, including packing gland. Circular tapered plug seating performs with equally high efficiency on precise throttling or where unrestricted flow is needed. These valves also made in all Monel. See your Crane Catalog or Crane Representative.





Exact Automatic Formula Control WITH NEPTUNE METERS



Send for new Neptune
Liquid Meter Bulletin 566-M P

Hitting formulas "on the nose" time after time is automatic with these new Neptune Auto-Stop liquid meters. With an Auto-Stop on every liquid line feeding into the batch or blending, the operator simply pushes buttons to set the number of gallons or pounds required by the formula. He then opens the valve and the meter does the rest, shutting off at the exact quantity.

Neptune meters pay for themselves by eliminating spoilage, spillage, over-filling and the unsanitary muss and fuss of gauge sticks, pails or batch tanks. They stop waste of valuable ingredients and prevent over-dilution with water that must later be removed. Their accurate figures take the guesswork out of inventory control too. The Neptune Auto-Stop is only one of many Neptune meters available for handling over a hundred different industrial liquids. Why not ask for a complete plant survey at no obligation?

NEPTUNE METER COMPANY

50 West 50th Street, New York 20, N. Y.

Branch Offices and Telephone Numbers

| | | | |
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| ATLANTA | Lamar 5016 | N. KANSAS CITY | Norclay 3345 |
| BOSTON | Hancock 6-9123 | LOS ANGELES..... | Michigan 5112 |
| CHICAGO .. | Sacramento 2-4014 | LOUISVILLE | Jackson 2293 |
| DALLAS | Riverside 4904 | PHILADELPHIA..... | Locust 4-3170 |
| DENVER | Main 3221 | PORTLAND | Broadway 0100 |
| SAN FRANCISCO | Garfield 1-8144 | | |
| IN CANADA: TORONTO, ONTARIO | Lindhurst 5495 | | |

*Just reach for
the phone!*

When inquiring check CP 9157 on handy form, pgs. 2-3

PROCESS INSTRUMENTATION

Color control system built of standard components to fit any job . . .

eight component make up system for control of shade, color, thickness, sorting, and other tasks

Uses: Systems built with these components have been applied to a great variety of jobs. Typical cases: with indicator dyes added — process control, toxicity alarm; process control by product color; determining thickness of coatings; shade and color control in dyeing; water or sewage treatment by reference to standards; and, sorting or inspecting ceramics, painted articles.

Features: Any number of sensitive, reliable systems can be built up in conjunction with other equipment. Only the components actually needed are used to build the equipment.

Description: The eight components which can be built into Colorede photo-electric instruments are: 1) illumination unit, 2) beam splitter assembly, 3) servo slit system, 4) flicker unit, 5) photo-electric unit, 6) data assembly, 7) electronic assembly, and 8) mounting plate.

In most applications the electronic photo-electric, flicker, and servo slit units are employed. Of course one or more of the other units may be used or, where necessary, a special accessory unit may be designed. Operated as a direct signal device, the system can generate 1 volt (DC) for as little as 1 percent full scale relative brightness difference between a sample and standard. An alternative scheme for measurement is to use the servo driven slit as a direct quantitative measurement of brightness. This may be done with a mechanical linking of the slit to an indicating device or by an electrical output from the servo unit. A servo operated drive shaft in the unit may be used in either of the above plans, or it may be used to control corrective measures taken by other equipment.

(Manufacturer maintains complete engineering service for specifying and designing systems to order. Instrument Development Laboratories, Inc., Dept. CP, 163 Highland Ave., Needham Heights 94, Mass. . . . or for more information check CP 9158 on handy form, pages 2 and 3.)

Clock-like valve-position indicator makes reproducing settings simple as telling time . . .

two-hand meter also used on handwheel controls; one hand indicates full turns, the other, fractions

Uses: Shows exact position of valves and other hand-wheel controls.

Features: Face of the meter, like that of a clock, has two hands. One hand shows the number of full turns; other hand shows fraction of last turn completed.

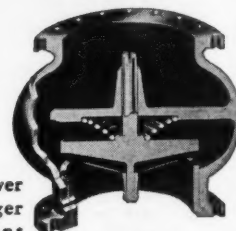
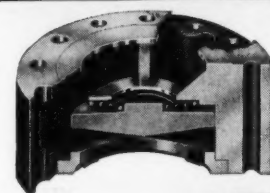
Description: Tejax Visual Valve Position Indicators and Indicating Handwheels are available for most valves in the $\frac{3}{8}$ " and up sizes. Indicators are built for from 12 to 200 turns.

Operation of the device depends on a horizontal valve stem position, since operation of "clock" mechanism is due to a gravity bearing mechanism. Mechanism is built into a valve handle which can be substituted for the original handle of the valve. Indicating mechanism and face is adjustable within this handle so as to be set to true zero when installed. This makes it possible for the indicator to show any valve wear and allows resetting in cases where the wear effects accuracy of reading.

Most standard models are designed for use with standard



WILLIAMS-HAGER
flanged
Silent check
VALVES



Wherever Williams-Hager flanged Silent Check Valves are installed, plant maintenance men will tell you their costly water hammer troubles are over. These dependable, durable and compact valves can be placed in your water system in any position, including angular, and will provide maximum protection at all times. They are available for every service in standard pipe sizes from 1" to 20". Why not rid your plant of water hammer now . . . get Williams-Hager Check Valves.



Write for Bulletin WH 851

Write today for your copy of this informative bulletin on Water Hammer, its Cause, Effect and Control in Piping Systems.

THE WILLIAMS GAUGE CO.

3015 PENNSYLVANIA AVE. • PITTSBURGH 33, PA.

When inquiring check CP 9159
on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESS INSTRUMENTATION

valves and read 12 full turns and fractions (to 1/120 turn.) Special units are also available for OS&Y valves, and high-lift, V-port regulating valves. Other hand-wheel indicators provide for 50 or 200 turns. Typical dial faces are from 2 3/8" diam and up.

(Manufactured by Tejax Engineering Corporation, Dept. CP, Providence 1, R.I. . . or for more information check CP 9160 on handy form, pages 2 and 3.)

Improved performance noted in tests of double pass monochromator . . .

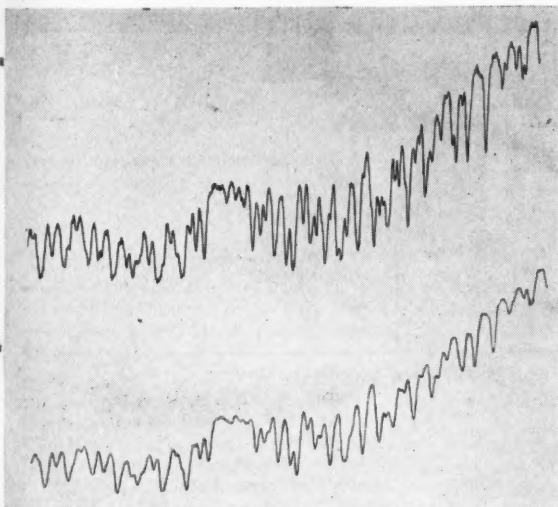
passes light through same prism twice — improves resolution, signal-to-noise and scattering

Single prism, double-pass monochromator (pg. 152 CHEMICAL PROCESSING, January, 1952) has been incorporated in an infrared spectrometer currently in production. Tests of this unit, the Model 112, reflect the improved performance of the light source.

Model 112 retains all the features of its prototype, Model 12-C. These include prism interchange, mobile mounting console, automatic wavelength speed scheduling, provision for polarization studies and both micro and macro sampling. In addition, use of the double-pass monochromator with light passed through the same prism twice, has resulted in the following changes in characteristics:

| Double pass | Single pass |
|----------------------------------|----------------------------------|
| Slits 0.025 mm | Slits 0.025 mm |
| Gain 0.1 microvolt full scale | Gain 0.4 microvolt full scale |
| Response 4 | Response 2 |
| Recording time 25 min | Recording time 8 min |

These test results were acquired in making the accompanying plots. Spectrum is the 6-micron water vapor absorption band. Single pass instrument produced the lower

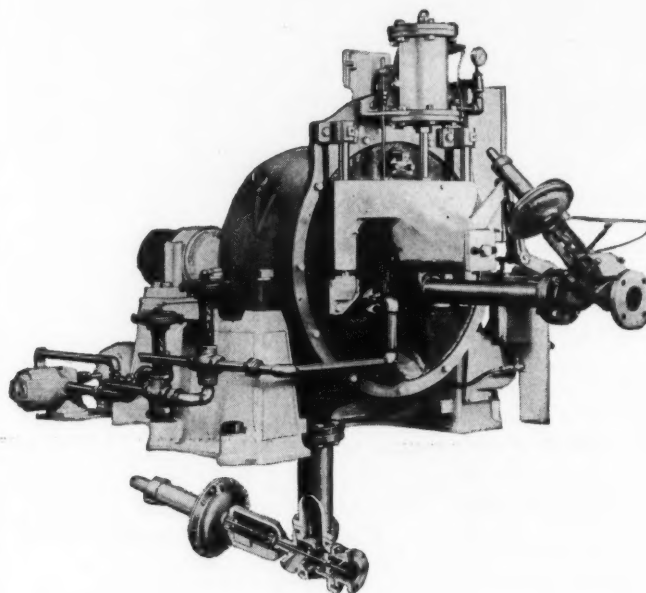


trace; double pass, the upper. Difference in gain and signal-to-noise ratio is apparent. Double pass system holds scattering of the radiation to less than 0.1% throughout the band.

(Development of Perkin-Elmer Corp., Dept. CP, Norwalk, Conn. . . or for more information check CP 9161 on handy form, pages 2 and 3.)

FEBRUARY, 1952

Over 95% OF THE AUTOMATIC CRYSTAL DRYING CENTRIFUGES PURCHASED IN THE UNITED STATES in 1951 WERE *Sharples Super-D-Hydrators*



Bulletin 1257 will be sent upon request.
May we discuss your crystal drying problems with you?

TYPICAL MATERIALS ECONOMICALLY DEHYDRATED WITH THE SHARPLES SUPER-D-HYDRATOR

- ACETYSALICYLIC ACID
- AMMONIUM PERSULPHATE
- AMMONIUM SULPHATE
- BORAX
- BORIC ACID
- COPPER SULPHATE
- FERROUS SULPHATE
- HEXAMINE
- MONOCHLORACETIC ACID
- NAPHTHALENE
- PARADICHLOROBENZENE
- POLYSTYRENE
- POTASSIUM CHLORIDE
- SODIUM BICARBONATE
- SODIUM CARBONATE
- SODIUM CHLORATE
- SODIUM CHLORIDE
- SODIUM HYDROSULPHITE
- SODIUM SESQUICARBONATE
- SODIUM SULPHATE
- UREA
- ZINC SULPHATE
- AND MANY OTHERS

SHARPLES

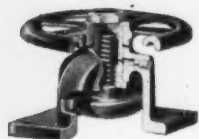
THE SHARPLES CORPORATION • 2300 WESTMORELAND STREET, PHILADELPHIA 40, PENNA.
NEW YORK • BOSTON • PITTSBURGH • CLEVELAND • DETROIT • CHICAGO • NEW ORLEANS • SEATTLE • LOS ANGELES • SAN FRANCISCO • HOUSTON

When inquiring check CP 9162 on handy form, pgs. 2-3

**for valving corrosive
and "hard-to-handle" fluids . . .**

HILLS-McCANNA

*offers over 20,000 different
"custom-made" assemblies on
a standardized basis*



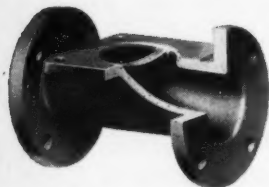
32 standard operators

Methods of operation for Hills-McCanna Valves include hand-wheel and lever operators, sliding stem, air and hydraulic cylinders, diaphragm motors and electric motors in a variety of types.



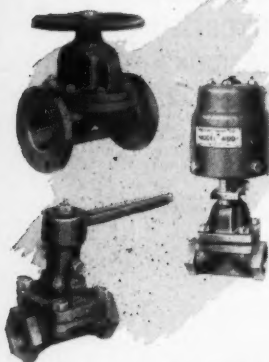
14 standard diaphragms

Diaphragms, the heart of Hills-McCanna Valves, are offered in the widest choice to best suit your individual needs; 5 types of rubber, 3 of Neoprene plus Hycar, butyl, Tygon, Compar, special polyethylene and Kel-F.



48 standard body materials

Bodies for Hills-McCanna valves are furnished in cast iron, with or without such linings as rubber, glass, lead, etc.; in any machinable alloy or in such materials as Karbate, stoneware, porcelain, etc.



By offering such a broad selection of operators, diaphragms and bodies, Hills-McCanna is able to furnish so many standard combinations that the user is in the position of being able, in most cases, to find the exact valve that best fits his individual requirements. There is virtually never any need to adapt to your service a valve developed for someone else's needs.

The 36 page catalog No. V-52 gives full details on all Hills-McCanna Valves. Write for your copy. HILLS-McCANNA CO., 2370 W. Nelson St., Chicago 18, Illinois.

HILLS-McCANNA

saunders patent diaphragm valves

**Also Manufacturers of Proportioning Pumps
Force Feed Lubricators • Magnesium Alloy Castings**

When inquiring check CP 9163 on handy form, pgs. 2-3

PROCESS INSTRUMENTATION

**Almost any frequency
read at true voltage
with this meter . . .**

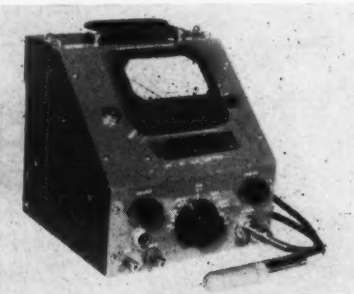
vacuum tube voltmeter has usable range from 20 to 700,000,000 cps

Uses: For checking electrical circuits and parts. Meter combines AC, DC scales, ohmmeter and power-level instrument. Special probes, supplied with the instrument give extensive AC range.

Features: Errors due to frequency are less than 1% in the range from 60 cps to 20 kc; are less than 1 db from 20 cps to 700 mc.

Description: Model 161-A Vacuum Tube Voltmeter provides six AC scales (1, 3, 10, 30, 100, 300 v) and seven DC scales (same as others plus a 1000 v scale). Seven ohmmeter scales with center values of 10, 100 . . . up to 10 megohms are provided, giving a practical reading range from 0.1 ohm to 1000 megohms. Power-level meter reads from -10 db to +10 db and is based on the 3 volt scale at 600 ohms.

Overall accuracy for any reading on any scale is 3% or better. DC full scale calibration of 1 and 3 volt



Frequency errors less than 1% in usual range

scales and AC full scale calibration of 1, 3 and 10 volt scales is adjusted to within 1 1/2% at factory.

On-off control is part of the function switch of the instrument. Other panel controls are range switch, DC zero adjustment, ohms adjustment and AC balance adjustment. Input resistance is within 2% of 43 megohms (all DC ranges) and 7 megohms at 60 cps AC (shunt capacity: 1.3 μ f).

Meter draws 25 w at 105 to 125 v 50/60 cps. It is 8 x 8 x 8 1/2" and weighs 8 1/2 lb with accessories. Test and ground leads, including probes, are supplied with the unit.

(Product of The Electronic Measurement Company, Dept. CP, Red Bank, N. J. . . . or for more information check CP 9164 on handy form, pages 2 and 3.)

**Check Temperatures
Instantly...
Accurately
with
Alnor TYPE 1500
PORTABLE PYROMETER**



Wherever temperature readings are required—on the production line, in the laboratory or in the field—this sturdy precision instrument can bring you instant, accurate results.

Here's Why

It's Fast . . . in operation and quickly read. Precision movement designed to laboratory standards. Direct reading scale face is easily understood—no slide wires or conversion tables necessary.

It's Accurate . . . consistently to within 3/4 of one percent under almost all variable conditions. Sturdy, protective case assures continued accuracy in toughest portable service. Ten scale ranges available, from 0-400° to 0-3000°F. Equivalent Centigrade scales available at no extra cost.

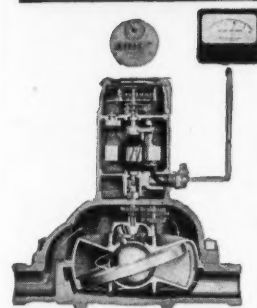
It's Portable . . . compact size, 6 1/2"x6"x3", and light weight make this pyrometer highly portable and easy to use anywhere. Write today for complete details and prices. Illinois Testing Laboratories, Inc., Room 504, 420 N. La Salle Street, Chicago 10, Illinois.

Send for Bulletin on 1500 Pyrometer.

Alnor PRECISION INSTRUMENTS
FOR EVERY INDUSTRY

When inquiring check CP 9165 on handy form, pgs. 2-3

Remote indication and control of liquid flow



Hays VERIFLOW meter accurately measures, indicates, and totals the flow of corrosive and hard-to-meter liquids without using weigh tanks, orifice plates, or gage sticks. With the Hays VERITROL you simply set a knob at the rate of flow desired . . . then, the VERITROL controls the flow of liquid at that set-rate.

for corrosive liquids

Acetic Acid, Aluminum Potassium Sulphate, Ammonia, Calcium Compounds, Carbolic Acid, Formaldehyde, Fruit and Vegetable Juices, Hydrogen Peroxide, Phosphoric Acid, Potassium Hydroxide, Sodium Compounds, Sulphuric Acid (concentrated), Stearic Acid, and many others

Send for a complete description of Hays Veriflow Meter and Veritrol.
Bulletin 48-766

THE HAYS CORPORATION
MICHIGAN CITY 12, INDIANA

When inquiring check CP 9166 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESS INSTRUMENTATION

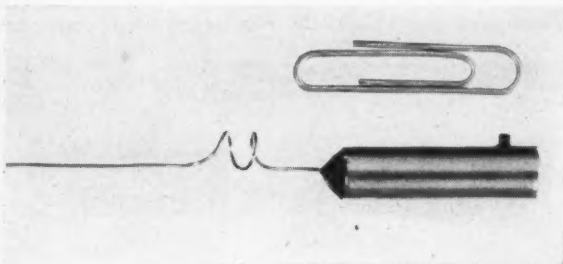
Small bimetal thermostat regulates temperature of instruments . . .

can also be used in small hot plates, battery charging systems, other similar tasks

Uses: Adjustable miniature thermostat can be used to maintain desired ambient temperature in instrument housings. It is also recommended for use in battery charging systems, small hot plates and other heat control jobs where electrical load is not large.

Features: Element is very small (shown actual size). It is adjustable to 60°F on either side of factory setting.

Description: This adjustable thermostat is only 1 1/4" by about 5/16". Yet, its contacts are rated at 1 amp at 115v AC or 0.5 amp at 115v DC. Temperature range of



Thermostat handles 1 amp @ 115v AC

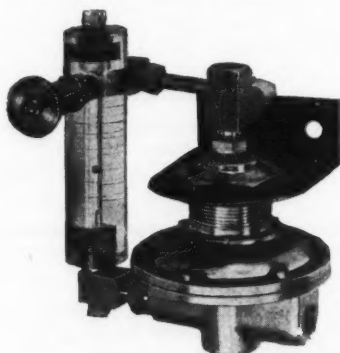
the element is -50 to 350°F. Setting is made at factory within this range. Stability of the set point is assured by using a phosphor-bronze spring to support the moving contact. Thus, at extreme temperatures, mechanical strain on the bimetal element is taken up by the spring.

(Produced by Instrument Div., Thomas A. Edison, Inc., Dept. CP, West Orange, N. J. . . or for more information check CP 9167 on handy form, pages 2 and 3.)

Constant flow assembly uses tiny rotameter as pilot . . .

upstream or downstream pressure does not affect flow; controlled by rotameter needle valve

Both liquid and gas flows are easily controlled by combining a mid-gate purge meter (rotameter) with Conoflow's H-11 constant differential relay. When these devices are used together, they are independent of upstream or downstream pressure. Needle valve of rotameter provides



a simple control of flow rate. Miniature flowmeters (see CHEMICAL PROCESSING for January, 1952) are made by boring the tube from solid acrylic plastic. They employ no packing or glass parts.

(Flow control assembly is available through Brooks Rotameter Company, Dept. CP-TU, Lansdale, Pa. . . or for more information check CP 9168 on handy form, pages 2 & 3.)



Infinitely Variable Speed MEANS MORE EFFICIENT PROCESSING

Do you process materials which require centrifuging at different speeds? Or do you have several products with different filtering and washing characteristics to be processed in the same centrifugal? If so, Tolhurst Suspended Centrifugals with infinitely variable speed hydraulic drive provide the most efficient answer. By simply turning the hand wheel on the fluid drive unit, you can select exactly the speed you want for each different operation. Tachometer indicates basket speed at all times.

YOUR CHOICE OF MATERIALS

BASKETS — Perforate or imperforate, constructed of steel, steel rubber-covered, stainless steel, monel or other materials.

CASE — Steel case can be lined with stainless steel, monel, rubber or other materials.

RACK AND FLOW OF COUNTERBALANCED UNLOADER—Steel, stainless steel, monel or bronze.

ACCESSORIES — Machine can be furnished with fume-tight cover, feed and spray pipes.



BASKET SIZES AND SPEEDS

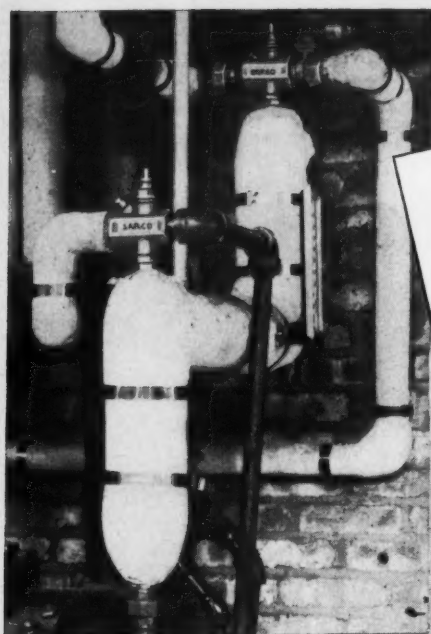
| | |
|--------------|------------|
| 20" diameter | 0-2500 RPM |
| 26" diameter | 0-2500 RPM |
| 32" diameter | 0-1500 RPM |
| 40" diameter | 0-1500 RPM |
| 48" diameter | 0-900 RPM |

WRITE FOR DETAILS AND PRICES

Tolhurst

CENTRIFUGALS DIVISION
AMERICAN MACHINE AND METALS, INC.
EAST MOLINE, ILLINOIS

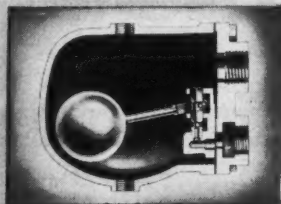
When inquiring check CP 9169 on handy form, pgs. 2-3



Sarco makes simple, self-acting temperature controls assuring the desired Jacket cooling effect with minimum water consumption regardless of load variations.



Sarco type TR-40-L Cooling Control-Jacket water temperatures never too hot or too cold.



Sarco type FA Drain Traps have four pressure ranges to 750 psi. Sizes: 1/4" or 1".

IS YOUR AIR COMPRESSOR CAPACITY EFFECTIVE?

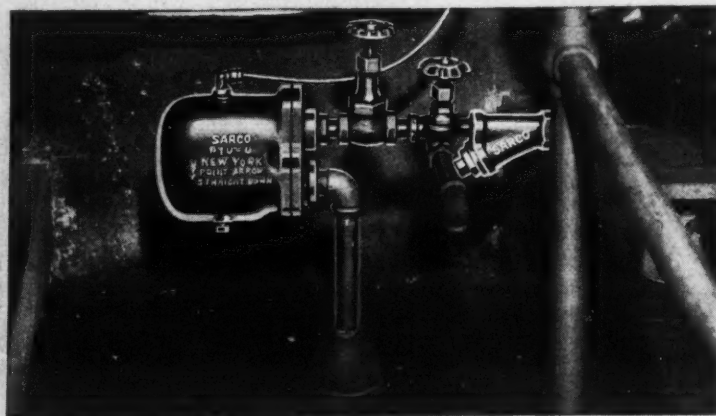
The true measure of effective air compressor capacity is the useful work done by your compressed air.

Measured by this yardstick, many compressor installations are very much oversize for the work they do.

Apart from poorly designed piping, the trouble usually lies in wet air, overcooling, undercooling, choked intake filters, etc. All of these things add up to expensive compressed air and high maintenance costs.

New Technical Bulletin, No. 5-CA, is designed to help users and would-be users of compressed air to get more work from their machines at less cost.

Write for your free copy today.



Sarco type FA compressed air trap automatically removes separated water from the bottom of the receiver. This greatly reduces the possibility of water being carried down the distribution lines to cause trouble in the tools or at the air nozzles. This trap is also used to drain water from separators and the low points of distribution lines.

SARCO

COMPANY, INC.

343

PROCESS INSTRUMENTATION

Small beta ray gage usually accurate to 2 percent . . .

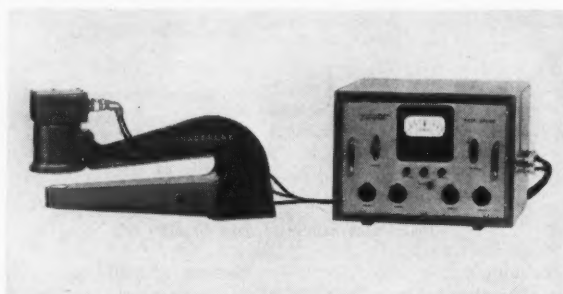
has handled rubber, paper, thin metal sheets and foils, plastics, and a variety of coatings

Uses: Can be used for continuous gaging or spot checks without actually touching the material to be tested. Currently in use on paper, paper coatings, plastics, plastic coatings, adhesive tape, thin metal sheets and foils, linoleum, and rubber.

Features: Accuracy in most cases is about 2% — in some cases 1/2% accuracy has been attained.

Description: Sensing element of the gage is 27 15/16" in overall length and has a throat depth of 19 1/4". It may be used on a continuous belt traveling at any speed.

Two types of pick up are used. Usual type, designated as absorption gage, places the detector on the opposite side



Standard gage mounting and console

of the moving web from the radioactive source. This type can be used with material weighing up to 600 mgm/sq cm. This corresponds to 0.030" steel, 0.090" aluminum, 0.250" rubber, or 500 sheets of paper. Second type, the backscatter gage, can be used with material about half as thick as the absorption gage handles. It operates from one side of sheet.

Several interesting systems of use have been devised. In the first place, the deep throat allows the gage to be used for scanning, or profiling, sheets up to 15" wide. A second important way of using the instrument is to install one gage just ahead of a coating step with another gage just following the step. Output of both gages is fed to a single recorder where, by difference, the coating thickness is registered. Still another installation calls for the use of a deeper throat or different mounting to scan sheets of much greater width than 15".

(Equipment is manufactured by Tracerlab, Inc., Dept. CP, 130 High St., Boston 10, Mass . . . or for more information check CP 9171 on handy form, pages 2 and 3.)

Shipment from stock announced for six flow meters

Two-color flyer, unfolding to 17 x 22," announces manufacturer's program of supplying components and meters from stock. These "area meters" are now tagged with their calibration factor and so are received for use.

Flyer details six individual meters included in the program. These are: Flowrater, indicating and transmitting flow meters, Magnasight, Ratonsight, Bull's Eye sight flow indicators, and C-clamp laboratory Flowraters.

"Stock Meter Flyer" is available from Fischer & Porter Co., Dept. CP, 5580 County Line Rd., Hatboro, Pa. When inquiring specify CP 9172 on handy form, pages 2 and 3.

CHEMICAL PROCESSING

When inquiring check CP 9170 on handy form, pgs. 2-3

PROCESS INSTRUMENTATION

Charts 6 variables whether stationary or moving . . .

meets most joint army-navy specs for mobile oscillograph

Uses: Designed to meet many official specifications for oscillographs used by mobile units tracking guided missiles. It is well suited for studies of vibration, acceleration, displacement, etc., where field conditions would be rough on other delicate instruments.

Features: Instrument will operate satisfactorily under bad conditions of vibration, or adverse atmospheric conditions. Plane of operation is not important.

Description: Direct recording oscillograph is a "ruggedized" four- or six-channel model of manufacturer's equipment. Operation is simple due to the minimum of controls employed.

Each channel is provided with an AC/DC amplifier and a heated stylus draws traces directly on heat-sensitive paper.

(Product of Rahm Instruments Inc., Dept. CP, 12 W. Broadway, New York 7, N. Y. . . . or for more information check CP 9173 on handy form, pages 2 and 3.)

Tells whole story of instrument line

Illustrated, six-page publication outlines operation, advantages, and characteristics of an electronic instrument system for recording, controlling, indicating, etc.

Feature of the instrument system is the use of low voltage AC with a standard maximum signal for any type of sensing element. This provides for instantaneous transmission, unlimited distance between units, and interchangeability of sensing elements, recorders, control elements, etc. Final control may be with pneumatic equipment, if desired.

Photographs and schematics illustrate the equipment and operating installations. Details like power supply, operation in hazardous locations, etc., are discussed.

Entitled Data Release A-703, it is issued by The Swartwout Company, Dept. CP, 18511 Euclid Ave., Cleveland 12, Ohio. When inquiring specify CP 9174 on handy form, pages 2 and 3.

For more information on product at right, specify CP 9175 . . . see information request blank between pages 2-3.

Special Cast Iron Housing and Top Only 4 Bolts

Compressed Air or Water Operated

BALL CHECK LUBRICATOR SILICONE grease for temperatures from 40° to 500° F.

Max. Pressure 250 psi.

Max. Temperature 450° F.

SIZES: 1/2" thru 2"

Direct and Reverse Acting

RENEWABLE PLUG and SEAT Stainless Steel

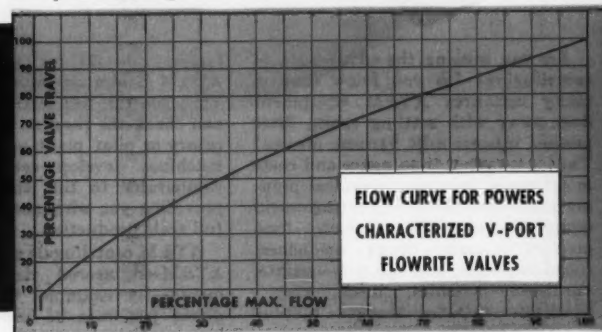
SEPARATE SHUT-OFF SEAT

VALVE TOP—Durable moulded neoprene diaphragm (1) has positive sealing bead which provides increased sealing action with increasing control pressure. Efficient diaphragm form insures ample and constant operating power thru full travel. Piston Plate Assembly (2) has a free floating thrust plate which absorbs side thrust. Closely guided piston plate maintains stem in accurate alignment. Maximum air pressure in top, 22 psi.

POWERS® SINGLE SEAT V-PORT Characterized FLOWRITE VALVES Give—

Special Flow Characteristics—High lift V-Port plug provides proportional flow throughout entire lift of stem as shown in chart below.

Wide Variety of Valve Sizes—Nine sizes are available, 1/2" thru 2". The 1/2" valve can be furnished with plugs to give 15%, 30%, 60% or 100% of maximum capacity. Plugs are easily interchangeable without removing valve from line.



Better Control—Less Maintenance—Superior design of stainless steel plug and seat reduces wire drawing, insures longer life and tight shut off. V-Ports do the throttling, protecting separate shut off seat. Plug and seat are truly removable and can be easily replaced in the field. Inner valves are machined and precision ground and lapped within very close tolerances.

Low Hysteresis—Due to smooth rolling diaphragm and polished stainless steel stem in preformed lubricated packing.

Easy to Adjust—Ball bearing adjusting screw; rust proofed steel calibrated springs with full travel in 5 or 10 psi.

Easy to Install—Powers Flowrite V-Port valves have double unions and bronze body with rugged construction to withstand piping strains.

Easy to Service—Valve and top are easy to take apart and re-assemble, facilitating inspection and maintenance.

Reasonably priced. Contact our nearest office for prices and assistance in selecting proper size valves

THE POWERS REGULATOR CO.

SKOKIE, ILLINOIS • Offices in Over 50 Cities

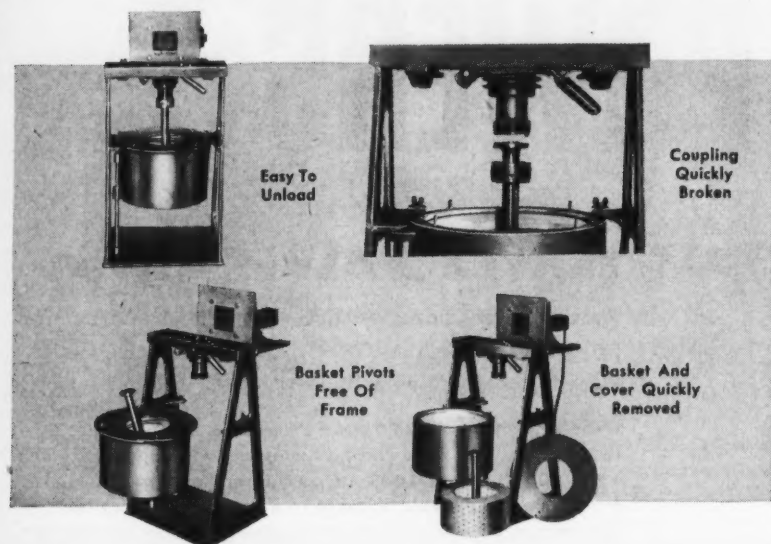
Chicago 13, Ill., 3819 N. Ashland Ave. • New York 17, N. Y., 231 E. 46th Street
Los Angeles 5, Cal., 1808 West 8th Street • Toronto, Ontario, 195 Spadina Ave.
Mexico, D. F., Apartado 63 Bis. • Honolulu 3, H. I., P. O. 2755—450 Piikoi at Kona

OVER 60 YEARS OF TEMPERATURE AND HUMIDITY CONTROL



GET THIS PROOF!

Rent An AT&M Centrifugal . . . See For Yourself
How Centrifuging Can Benefit You



Are you missing the advantages of centrifuging? Do you know that in many instances AT&M equipment does away with settling tanks, filter presses, squeeze rolls, vacuum presses? That it is saving time, space and costs in processes involving chemical preparations—explosives—nitrating—acid wringing—ammonium sulphate—food products—soap—drugs, medicines, cosmetics—oils and greases—paints, varnishes—ceramics, brick, clay—fertilizers—nitrates—sludges—textiles—plastic bases?

Here's an easy, inexpensive way to prove to yourself exactly what centri-

fuging can do for you. Rent an AT&M laboratory model centrifugal. Then you can test your own materials and check the results. Ideal for laboratory or pilot plant operation, these machines develop centrifugal force comparable to full size equipment, providing you with accurate data for full scale production.

AT&M centrifugals are packed with AT&M-engineered design developments—for example: variable speed drive; perforate or imperforate baskets, rubber covered or in any machinable metal; fume-tight hoods for processing volatile liquids.

RENTALS COST LITTLE

You can rent a laboratory centrifugal from AT&M at a very nominal rate. If you later decide to buy, part of the rental fee will be credited against the purchase price. Write for particulars.



FREE

Illustrated Booklet

AMERICAN TOOL AND MACHINE COMPANY

1412 Hyde Park Avenue, Boston 36, Mass.

Please send me my free copy of the new AT&M booklet "Centrifugal Force." I am interested in the following processes:

Separation ☐ Extraction ☐ Dehydration ☐ Clarification ☐ Coating ☐ Filtration ☐
Draining ☐ Thickening ☐ Impregnation ☐ Sedimentation ☐

ANY OTHER PROCESS:

Name.....Title.....

Company.....

Street.....

City.....Zone.....State.....

SAVE TIME,
SPACE AND
COSTS WITH

A.T. and M.
CENTRIFUGING

When inquiring check CP 9176 on handy form, pgs. 2-3

PROCESS INSTRUMENTATION

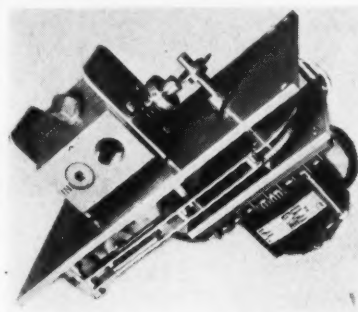
**Electrical conversion
of torque to signal
is accurate . . .**

$\pm 1/4\%$ precision available with
3000 unit scale

Uses: For metering torque, especially where remote reading is needed. Successful application to date includes input and output torque, dynamometers, bolt ring torque.

Features: Accuracy of unit is plus or minus $1/4$ per cent. Sensitivity is high enough to warrant use of a 3000 unit scale.

Description: Torque or mechanical force can be converted into an electrical signal with the Torsion Bar Load Cell. In either case the force is applied through a lever linkage to a precision-machined torsion bar which



Units handle forces up to 2500 lb

is fixed at one end. Free end is linked to the core of a differential transformer as well as the force to be measured. Changes in the core position are registered by the amplitude and phase of transformer output.

Transformer armature need only move 0.1 inch for full range of instrument, hence the total deflection of the torsion bar itself is limited to 0.060 inches. Eight ranges are available — from 0 — 100 to 0 — 2500 pounds of applied force. This range extends in either direction and the instrument can stand sudden loading or release of load.

Units are factory calibrated but recalibration in the field requires only one adjustment.

(Produced by Automatic Temperature Control Company, Inc., Dept CP, 5200 Pulaski Ave., Philadelphia 44, Pa. . . or for more information check CP 9177 on handy form, pages 2 & 3.)

Shortcut solutions to processing and engineering problems — see pages 132, 4, 6, and 8.

Accurate Temperatures

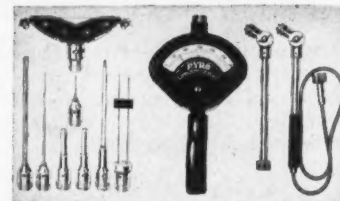
AT A GLANCE WITH THE SIMPLIFIED
PYRO OPTICAL PYROMETER



Any operator can quickly determine temperatures on minute spots, fast-moving objects and smallest streams. Completely self-contained. No calibration charts or accessories needed. An accurate, direct reading Pyrometer that pays for itself by helping prevent spoilage. Weighs 3 lbs. Available in 5 temperature ranges (1400° F. to 7500° F.). Ask for free Catalog No. 80.

The Improved PYRO SURFACE PYROMETER

8 instruments in one, handles all surface and sub-surface temperature measuring jobs. Has selection of 8 types of thermocouples; all interchangeable in seconds with no recalibration or adjustment. Automatic cold end compensator.



Shock, moisture and dust-proof. Accurate, big $4\frac{3}{4}$ " indicator. Available in 5 temperature ranges. From 0-300 to 0-1200°F.

ASK FOR FREE
CATALOG No. 165

The Pyrometer Instrument Company

New Plant and Laboratory BERGENFIELD 28, NEW JERSEY

Manufacturers of Pyro Optical, Radiation, Immersion and Surface Pyrometers for over 25 years

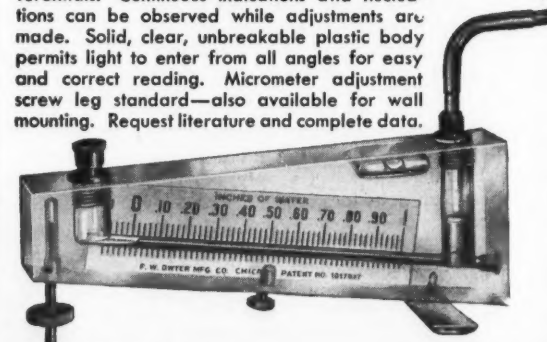
When inquiring check CP 9178 on handy form, pgs. 2-3

A JEWEL ...in Performance ...in Appearance

DWYER
TRANSPARENT

PORTABLE DRAFT GAGE

The easily operated Dwyer Draft Gage permits precision measurement of drafts, air velocities, slight pressure changes—even vacuums and differentials. Continuous indications and fluctuations can be observed while adjustments are made. Solid, clear, unbreakable plastic body permits light to enter from all angles for easy and correct reading. Micrometer adjustment screw leg standard—also available for wall mounting. Request literature and complete data.



F. W. Dwyer Mfg. Co.

335 South Western Avenue, Chicago 12, Illinois

When inquiring check CP 9179 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESS INSTRUMENTATION

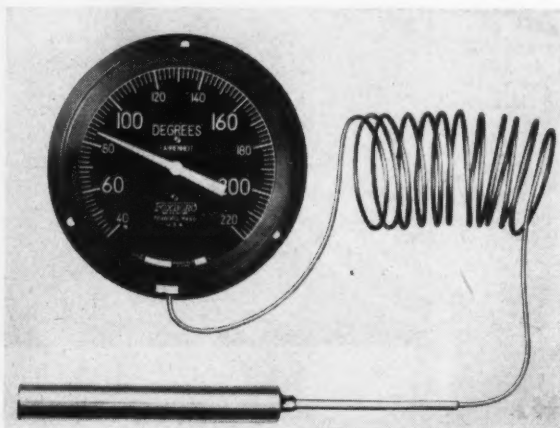
Built to stand up to corrosion and fumes, thermometer covers handy range . . .

40 to 220°F scale is stretched over 10 $\frac{3}{4}$ "; meter has 10' tube connecting it to sensitive bulb

Uses: Especially designed for dye-bath work, this thermometer has a range which makes it useful with almost all water solutions at atmospheric pressure.

Features: Indicating scale is 5" diam, 10 $\frac{3}{4}$ " long and can be located up to 10' from the sensitive bulb.

Description: A gas filled system is used in this Dye Tub Thermometer permitting dial to be placed at any elevation with respect to the sensitive bulb. Another



Readable from a distance of 20 feet

advantage of the gas system is the uniform scale which results. Scale runs from 40 to 220°F with one division every two degrees. It can be read from 20 feet.

Bulb, tube and other parts exterior to the dial case are 316 stainless. Dial itself, while using many stainless parts, is a high-silicon aluminum alloy. Vapor-tight gaskets keep fumes from corroding the instrument mechanism. Play, due to wear in the movement, is reported to be a minor factor in the life of the thermometer because of stainless gears and other moving parts.

Capillary tubes longer than 10' are available on special order.

(Product of The Foxboro Company, Dept. CP, Foxboro, Mass. . . . or for more information check CP 9180 on handy form, pages 2 and 3.)

Stresses uses, adaptability of nefluoro-photometer

Sixteen-page, three-color, illustrated booklet serves to acquaint the reader with the nefluoro-photometer as an instrument of wide use. Starting from scratch the booklet shows the basic principles of colorimetry, fluorometry, and nephelometry. It then proceeds to 53 typical tasks of the device. These include analyses and tests for acetone, boron, calcium, vitamins, transparent lacquers, aluminum in steel.

Diagrams and photographs illustrate the clearly written text — showing construction and operation of the instrument. Every basic step of the operation is described — as are the cells, attachments, and other equipment. "Ne-fluoro-Photometer" is issued by Fisher Scientific Company, Dept. CP, 717 Forbes St., Pittsburgh 19, Pa. When inquiring specify CP 9181 on handy form, pages 2 and 3.

FEBRUARY, 1952

LIFE SAVING

ANTIBIOTICS

BY



FLOW THROUGH

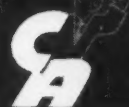
STAINLESS STEEL

VALVES & FITTINGS

BY



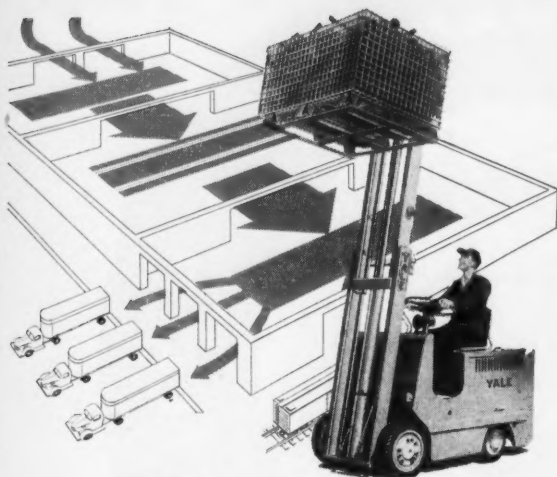
● This man will live—thanks to such "miracle" drugs as terramycin, streptomycin and penicillin. The world over, the balance between life and death hangs on their availability and purity. No one knows this better than the men and women of Chas. Pfizer & Co., Inc.—world's leading producers of antibiotics. That is why Pfizer engineers specify Cooper Alloy stainless steel valves, fittings and accessories for processing units in direct contact with these essential drugs. They know that corrosion resistant metals, cast by Cooper Alloy, mean uninterrupted performance and complete freedom from contamination. Yes, this man will live . . . thanks to medical science, manufacturing integrity, production ingenuity and the reliable performance of stainless alloys.



THE
COOPER ALLOY
FOUNDRY CO. HILLSIDE, NEW JERSEY

Leading Producers of STAINLESS STEEL Valves, Fittings and Castings

When inquiring check CP 9182 on handy form, pgs. 2-3



YALE electric trucks travel this route longer —for less

YOU CAN SAVE up to 75% of your production, receiving, shipping and storage handling costs with dependable, longer-lasting YALE Electric Trucks. Discover now the extra savings YALE Electric Trucks bring you—in operating, maintenance and replacement costs. Mail the coupon today.

THESE EXCLUSIVE YALE FEATURES KEEP TRUCK OVERHEAD DOWN

- Exclusive Hypoid Gears give greater drive power, longer drive life
- Exclusive Involute Spline Drive Shaft, built for continuous resistance to wear fatigue, outlasts all others
- Special Rolled Lift Channels with lifetime sealed ball bearing channel rollers won't wear, won't spread—need never be replaced
- Exclusive YALE design makes every part accessible for fast, cost-saving "minute-maintenance"

YALE & TOWNE

The Yale & Towne Manufacturing Co., Philadelphia 15, Pa.
YALE is a registered trade mark of The Yale & Towne Mfg. Co.

MAIL THIS COUPON TODAY

The Yale & Towne Manufacturing Co., Dept. 122
Roosevelt Blvd. & Haldeman Ave., Philadelphia 15, Pa.
I want the most from materials handling savings.

- ☐ Please send free detailed literature on the YALE ELECTRIC TRUCK
☐ Please have your local Representative call on me

COMPANY _____

NAME _____ TITLE _____

STREET _____ CITY _____ STATE _____

In Canada write: The Yale & Towne Mfg. Co., St. Catharines, Ont.

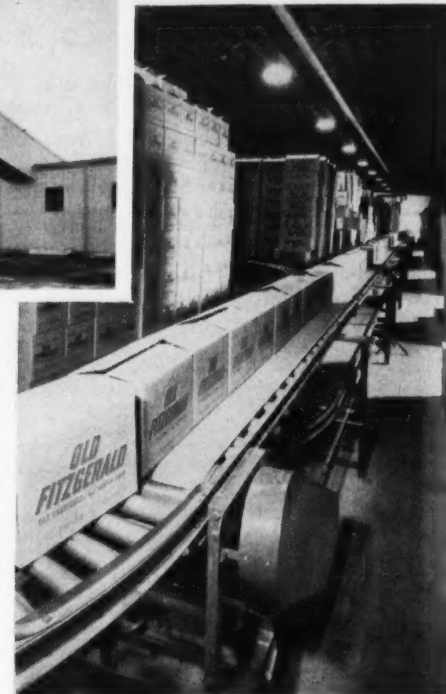
YALE GAS AND ELECTRIC TRUCKS • YALE WORKSAVERS
YALE HAND TRUCKS • YALE HAND AND ELECTRIC HOISTS

When inquiring check CP 9183 on handy form, pgs. 2-3

Material Handling



View (left) shows cases of empty bottles being conveyed through enclosed bridge (center) to filling machines and finally to storage, awaiting loading



Empty Bottles Take Fast Trip via Conveyors Over Bridge Linking Warehouse, Distillery

Many former manual operations now reduced to four; filling lines always adequately supplied

PROBLEM: It has been established practice at the Stitzel-Weller Distillery to move cases of empty bottles from the 65,000 case warehouse to bottling line on flats. These were moved manually, a method that was slow, laborious and could not be synchronized to the speed and capacity of filling machines.

Solution: System of two banks of conveyors was installed. This makes it possible to supply both bottling lines simultaneously or individually. Supplies may be drawn from stock at the same or different locations in the warehouse. Spurs and switches permit workmen to load one line with cases containing pints, while another line is either being loaded with fifths or tenths, depending on what size bottle is then being filled in the line. A covered bridge connects warehouse and bottling line building.

Results: Adequate supply of bottles of any size is always available for bottling line. Only four hand operations remain necessary: first, placing cases on conveyor as they arrive in freight car; second, removing empty

bottles from cases at bottling line; third, replacing filled bottles in cases; fourth, stacking them in trucks as they come off conveyor line at platform.

(Conveyor system built and installed by The Alvey Conveyor Mfg. Co., Dept. CP, 9301 Olive Street Road, St. Louis, Mo. . . . or for more information check CP 9184 on handy form, pages 2 and 3.)

Trailer trains towed quickly through storage area with stand-up type tractor . . .

battery operated unit has one pedal for forward and reverse, with latter controlled by switch

Uses: Specifically designed to speed pick-up of parts, materials and in assembling orders for shipment. Easy operation simplifies maneuvering trailer trains through storage and warehouse areas to shipping departments.

Features: One pedal controls both forward and re-



Stand-up tractor platform is only 7" above floor

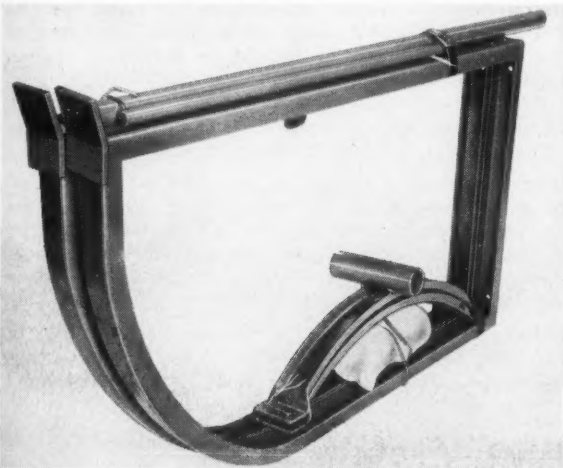
verse operations. Tractor platform is only 7" off floor, eliminating unnecessary exertion in getting on and off to load and unload trailers.

Description: Tractor can haul up to 10,000 lb of load at 3 mph and has a no load speed of 4 1/2 mph. Unit is powered by a 340 amp-hr battery. Drive wheel is 10 1/2" diameter and has 7" face. Rear wheels are 7" diameter with 5" face. All wheels are fitted with two sealed-type ball bearings.

("Load-Mobile" tractor is built by the Market Forge Co., Dept. CP, Everett 49, Mass. . . or for more information check CP 9185 on handy form, pages 2 & 3.)

**Shipped as collapsed package,
18 and 24" barrel cradles
assemble in minutes . . .**

may be supplied with or without wheels in both sizes. In order to reduce shipping costs and shipping and storage space, American Pressed-Steel Barrel Cradles are shipped in the knocked-down package shown. Two models are available, one standing 18" high and the other 24". Cradles

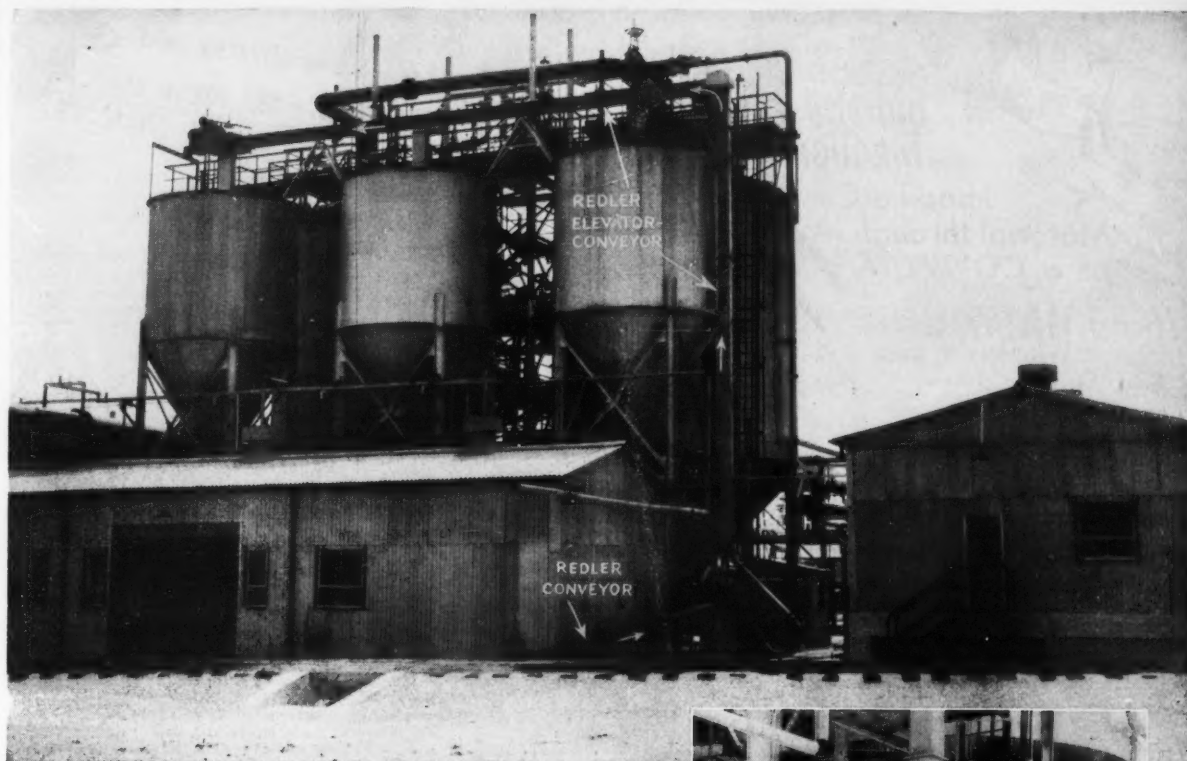


Builds unit which allows one man to handle drum

are reported to assemble in a matter of minutes. Wheels, if desired, can be supplied with either size. Cradles also are equipped with a "loading bar" which makes it possible for one man to handle a drum.

(Product of The American Pulley Co., Dept. CP, 4200 Wissahickon Ave., Philadelphia 29, Pa. . . or for more information check CP 9186 on handy form, pages 2 & 3.)

FEBRUARY, 1952



Keeping Their Powder Dry

Absorption of too much moisture causes lime, soda ash and magnesium oxide to cake. Because of its sealed, weather-tight casing, the REDLER elevator-conveyor proved to be a practical answer to the needs of this Louisiana plant where high humidity prevails. In providing a smooth, trouble-free flow of materials in spite of atmospheric conditions, the REDLER with its enclosed feature also avoids spillage of materials and prevents contamination.

This installation is typical of the many special-purpose, individually "tailored" materials handling systems that S-A engineers have been designing for nearly half a century. This cumulative experience has contributed to constant improvement in methods and equipment.

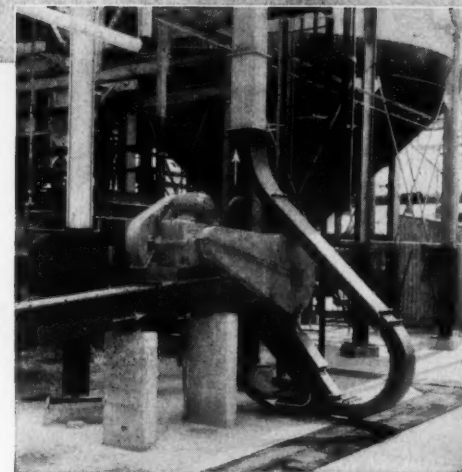
In working out your handling problems, you can draw on the experience of S-A engineers in practically every type of industry. In this way, you assure maximum handling efficiency at lowest cost per ton—particularly where difficult conditions exist. Write today.

STEPHEN S-A DAMSON

11 Ridgeway Avenue, Aurora, Illinois MFG. CO. Los Angeles, Calif. • Belleville, Ontario

DESIGNERS AND MANUFACTURERS OF ALL TYPES OF BULK MATERIALS HANDLING EQUIPMENT

When inquiring check CP 9187 on handy form, pgs. 2-3



**CIT-CON OIL CORPORATION
LAKE CHARLES, LA.**

Water-treating chemicals are picked up from under a small track hopper by a horizontal REDLER conveyor, 54 feet long, and conveyed on a slight incline to a transfer point. There the loop-boot REDLER elevator-conveyor receives and elevates them up the side of a 50-foot high storage tank. Materials are then conveyed horizontally for 54 feet over three adjacent storage tanks, where they can be discharged through gate-controlled chutes into the desired storage tank. This REDLER system is geared to handle from 5 to 7 tons per hour and is self-cleaning.



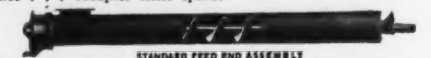
**DID YOU EVER LOOK
THROUGH A TUBE?**

Imagine Conveying Bulk
Material through it... by Means
of a CONVEYOR SCREW...

That's "HAMMOND" Screw-Veyor
CLEAN • EFFICIENT • DUST-LESS • ECONOMICAL

The most logical way to convey free-flowing bulk material — from flour to spent grain — cotton seed meal — cake — ground cork or other substances. Far superior to the "U" shaped box. Tube never carries any structural load. Each length runs in patented bearings. Smooth performance... occupies little space.

Comes in
Precision-
Built
Assemblies
Always in
Alignment.



STANDARD FEED END ASSEMBLY



STANDARD INTERMEDIATE ASSEMBLY



STANDARD DISCHARGE END ASSEMBLY

A COMBINATION OF THE ABOVE THREE ASSEMBLIES
FORMING A TYPICAL SCREW-VEYOR ASSEMBLY

Write
for form
M-600-2



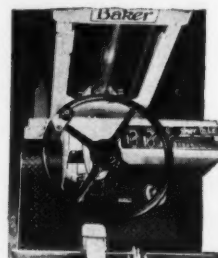
When inquiring check CP 9188 on handy form, pgs. 2-3



*If you can drive an auto—
you can drive the NEW BAKER
FORK TRUCKS!*

Simplicity of operation means no training period for new drivers. Ease of handling means more work per day. Increased visibility means greater safety and less damage to material handled. Happier operators mean improved employee relations.

- Easier Steering
- Greater Comfort and Operating Convenience
- Greater Visibility, Less Operator Fatigue, More Efficient Operation, Greater Safety
- Simple to Operate
- Easy to Service and Maintain



The New BAKER Fork Trucks can be serviced in a fraction of the time required for trucks of less advanced design. Compare the following times with the experience of your maintenance department:

| | |
|----------------------|------------|
| Remove Power Axle | 60 minutes |
| Remove Trailing Axle | 20 minutes |
| Reline Brakes | 30 minutes |

*Yours
for the
Asking!*

"CARE and MAINTENANCE OF INDUSTRIAL TRUCKS." Write for your copy today.

BAKER INDUSTRIAL TRUCK DIVISION of The Baker-Raulang Company
1208 West 80th Street, Cleveland 2, Ohio
In Canada: Railway and Power Engineering Corp., Ltd.

Baker INDUSTRIAL TRUCKS

When inquiring check CP 9189 on handy form, pgs. 2-3



How to increase the efficiency of your bucket elevators

**The next time you buy steel buckets,
be sure you get LINK-BELT "HS" Buckets**

Yes, you can get maximum efficiency and capacity from your centrifugal discharge bucket elevators with the use of Link-Belt advanced design "HS" Buckets.

Link-Belt "HS" Buckets give you the ultimate in centrifugal discharge bucket elevator operation... at either high speeds or nominal speeds. High bucket ends minimize spillage, while the low front lip provides efficient pickup.

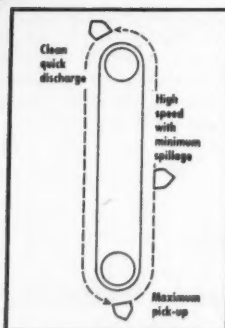
"HS" Buckets last longer, too —

• Corners are reinforced by end plates wrapped around body. End plates are same gauge as bodies for added strength.

• Crimped backs give added rigidity... permit smooth, flat back surface contact.

• Smooth interior results in maximum efficiency.

The complete Link-Belt line also includes steel, malleable and Promal buckets of various designs, including Salem and continuous types.



LINK-BELT

"HS" ELEVATOR BUCKETS

LINK-BELT COMPANY: Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa). Offices, Factory Branch Stores and Distributors in Principal Cities.

When inquiring check CP 9190 on handy form, pgs. 2-3

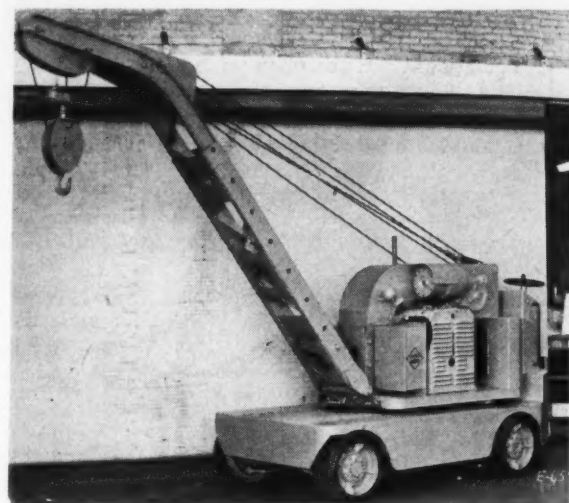
MATERIAL HANDLING

**Extended boom lengths up to 19'
slew of 296° give crane greater
operating flexibility...**

capacity is 5 tons at 5 1/2' radius; powered with either battery or gas-electric unit

Uses: For moving equipment or materials not readily lending themselves to conventional handling methods. Loads of up to 10,000 lb are lifted to hook heights of 18'. Bulk loads of ferrous metals are also easily handled when electro-magnet is attached. Serviceable in outdoor storage areas not served by overhead cranes.

Features: Four wheel steering; telescoping boom to provide boom lengths of from 12 to 19'; silent efficient worm drive. In addition to standard conventional steering,



4-wheel steering, 5 ton crane has boom extending 19'

electric power steering is available. This redesigned model is provided with wider bed and higher operator control plate for better forward visibility.

Description: Electric powered, mobile crane has 10,000 lb capacity at 5 1/2' radius. With boom fully extended to 19', a hook height of 18' can be obtained. Overall length and width are 130 3/8" and 66 3/4" respectively. Either 22 x 10" solid tires or 23 3/4 x 8" cushion tires can be supplied depending on load demands. Truck turns in 95° intersecting aisles. Maximum slew is 296°.

When required, outriggers for increased over-the-side capacity can be installed. Remote control of boom, hook and slew from load end can also be provided. Three individual motors with solenoid operated brakes power slew, hoist, and boom. Worm drive is silent and power is supplied by electric storage battery or gas-electric unit.

(Model CZ crane is built by The Elwell-Parker Electric Co., 4205 St. Clair Ave., Cleveland, Ohio... or for more information check CP 9191 on handy form, pages 2 & 3.)

**Extend serviceability
when lift truck adjusts
to skid height...**

dual-purpose superstructure for skids and pallets operates by cam and slot arrangement

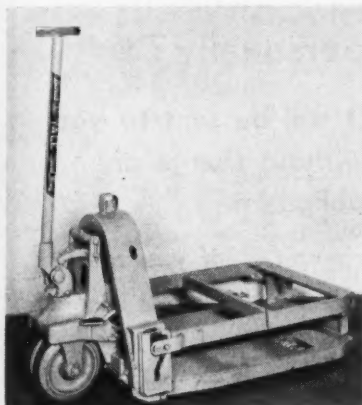
Uses: Superstructure enables hand lift pallet trucks to transport 7 to 12" skids as well as single or double-faced pallets.

Features: When lowered, superstructure is adjustable

CHEMICAL PROCESSING

MATERIAL HANDLING

to 7 to 12" skid heights by a simple cam and slot arrangement. Trucks thus equipped can instantly be adjusted to meet changing requirements. Limited handling of either skids or pallets is performed efficiently without use of special truck.



Handles 7" or 12" skids, pallets

Platform trucks can be similarly equipped.

(Superstructure is a development of Yale & Towne Mfg. Co., Philadelphia Div., Dept. CP, 11,000 Roosevelt Blvd., Philadelphia, Pa. . . or for more information check CP 9192 on handy form, pages 2 and 3.)

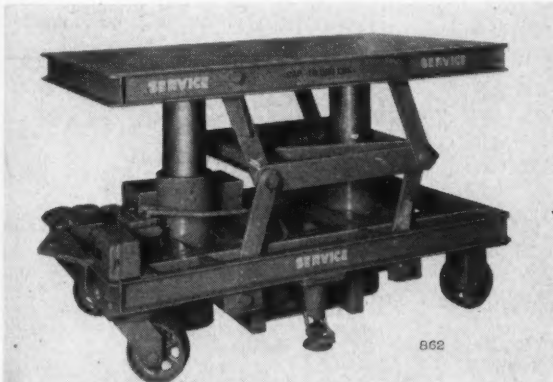
Work at press level 'duck soup' with lift tables . . .

up to 15 tons capacity, feed presses automatically

Uses: Tables for automatically feeding presses. Also, for receiving cut or stamped products after processing.

Features: Designed to operate continuously with production equipment.

Description: Press Feed Electraulic Lifttable is available in capacities up to 15 tons. Deck sizes vary from



36 to 54" wide and from 66 to 120" in length. Raised height of 42" is easily obtained from a lowered height of 26". Rugged casters provide mobility.

One set of controls can be built into the tables for coordination with presses.

(Product of Service Caster & Truck Corp., Dept. CP, Albion, Mich. . . or for more information check CP 9193 on handy form, pages 2 and 3.)

FEBRUARY, 1952

Description:

When superstructure is in raised position it is clamped vertically to provide a backrest for the pallet load on the truck. When lowered, it is adjustable to either 7 or 12" skid heights by a simple cam and slot arrangement. Trucks for which superstructure is designed are available in either mechanical or hydraulic lift type.

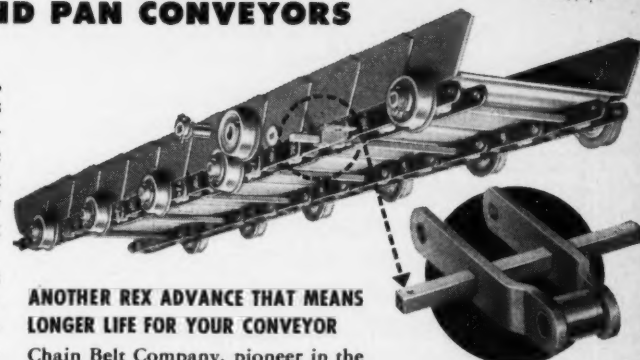


IS EASY WITH REX® APRON AND PAN CONVEYORS

When it comes to transporting hot bulk materials, there is virtually no upper limit to the temperatures the rugged, heavy-duty Rex Apron and Pan Conveyors can stand. Several now in operation are handling material up to 1900° F. Hot sinter, hot clinkers, hot lime, hot castings—these and many other "hot" items are all in a day's work with Rex Apron and Pan Conveyors.

Rex Conveyors will handle jobs where other types such as shaker conveyors and steel belts are useless. They have high capacity, require very little maintenance and operate at very low cost. Wearing parts are specially hardened. Chain is located away from high heat zone. Graphite impregnated grease is used throughout. When heat softens grease so that it flows, graphite remains to do lubricating job. With Rex, you are free from worry about premature failure and consequent costly down time or repairs.

For all the details write to Chain Belt Company, 4694 W. Greenfield Ave., Milwaukee 1, Wis.



ANOTHER REX ADVANCE THAT MEANS LONGER LIFE FOR YOUR CONVEYOR

Chain Belt Company, pioneer in the outboard roller construction for apron and pan conveyors, has now developed another new feature which can add years to the life of your conveyor—the square through rod. This exclusive Rex feature makes it impossible for the rod to rotate in the side plate. This means longer life for your conveyor 3 ways:

- 1 Through rod breakage is eliminated
- 2 Side bar failure due to enlargement of attachment holes is eliminated
- 3 Bushing life is greatly lengthened.

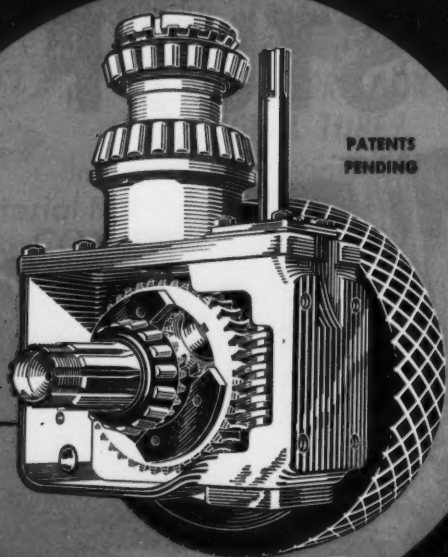


Chain Belt COMPANY OF MILWAUKEE

Atlanta • Birmingham • Boston • Buffalo • Chicago • Cincinnati • Cleveland
Dallas • Denver • Detroit • El Paso • Houston • Indianapolis • Jacksonville
Kansas City • Los Angeles • Louisville • Midland, Texas • Milwaukee • Minneapolis
New York • Philadelphia • Pittsburgh • Portland, Oregon • Springfield,
Mass. • St. Louis • Salt Lake City • San Francisco • Seattle • Tulsa • Worcester

Distributors in all principal cities in the United States and abroad

When inquiring check CP 9194 on handy form, pgs. 2-3



outwears chain drives **10 to 1**

This sealed gear drive guarantees much longer life for the Hydroelectric. Requires little maintenance . . . and only minimum attention. The sealed Gear Drive in the Hydroelectric Lift Truck is Stuebing engineered to give maximum service life without fuss or bother. This exclusive feature eliminates the main cause of excessive repairs and costly down-time in truck operation. All gears and running parts are sealed in lubricant. It is the widely accepted automotive type differential gear drive.

Over 1071 different types, sizes and models — there is one for every need.



LIFT TRUCKS
INCORPORATED

2423-31 SPRING GROVE AVE.
CINCINNATI 14, OHIO

MATERIAL HANDLING

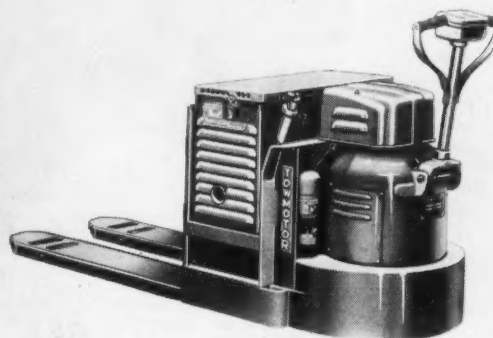
Built-in generator replaces battery as power source on pallet truck . . .

turning ignition key, pressing starter button instantly brings unit into service

Uses: Particularly useful for movement in close quarters or over short distances for prolonged periods.

Features: Delivers power as efficiently at end of long period of use as at beginning.

Description: Functioning part of Towmotor Model "W" electric pallet truck is the "Ready-Power" unit which replaces conventional storage battery as power source. Unit consists of small, gasoline-powered generator, fuel tank, starting battery and all accessories completely enclosed in a steel housing. To operate, it is merely required to turn ignition key, press starter



Gasoline-powered generator on pallet truck supplies constant, maximum voltage for operation

button, and power is immediately provided to move up to 4000 lb loads; refueling not necessary for 24 hr.

A speed control provides 3 variations — according to the handling job. When maneuvering in close quarters, speed arrangement allows loads to be "inched" along — without lost motions.

(Model "W" pallet truck with Ready-Power is available from Towmotor Corp., Dept. CP, 1226 E. 152nd St., Cleveland 10, Ohio . . . or for more information check CP 9196 on handy form, pages 2 and 3.)

Plastic armored conveyor rollers provide corrosion resistance at considerable savings . . .

also present a clean, uncontaminated surface to the material being conveyed

Uses: Where conveyor rollers are subjected to corrosive atmospheres or other severe conditions.

Features: Provide corrosion resistance at less cost than would stainless steel rollers, maker reports.

Description: Dekoron plastic armored conveyor rollers are made from steel tubing over which is extruded a coating of plastic. Thickness and composition of the plastic can be varied to suit virtually any condition; most often used, however, is a semi-rigid vinyl coating approximately 1/32" thick.

In addition to resisting corrosion, these rollers can be maintained easier so as to present a clean, uncontaminated surface to the material being conveyed. This

Would you like to receive CHEMICAL PROCESSING personally?

It will be sent to you without charge or obligation . . .

*. . . if you qualify
. . . if you request it*

If you are responsible for processing operations in an administrative capacity as plant superintendent, chemical engineer, chemist, engineer or equivalent responsibility . . . in a plant of substantial operations* where chemical processing is an important factor . . . CHEMICAL PROCESSING will be sent to you without charge or obligation if you request it. Use form below. In requesting, be sure to answer all questions. If your firm is not rated or listed in standard references, indicate size of the company by capacity, annual sales or number of employees. Unless all information is given, magazine will not be sent.

*"Substantial operations" does not necessarily mean an extremely large plant. But requests for the magazine exceed supply so we must set standards to insure publication being sent where it can be used to best advantage.

CHEMICAL PROCESSING
111 EAST DELAWARE PLACE
CHICAGO 11, ILLINOIS

Please send me CHEMICAL PROCESSING without charge or obligation

Name _____
Title _____
Company _____
Rating of Company _____
Street _____
City _____ Zone _____
State _____
Main Products _____

CHEMICAL PROCESSING

When inquiring check CP 9195 on handy form, pgs. 2-3

Bin Stuck Lately With Sticky Chemicals

?

A CLEVELAND Air Vibrator will go into action and settle the whole matter fast for you.

Write for our catalog

P.S. Don't forget to tell us your problem.

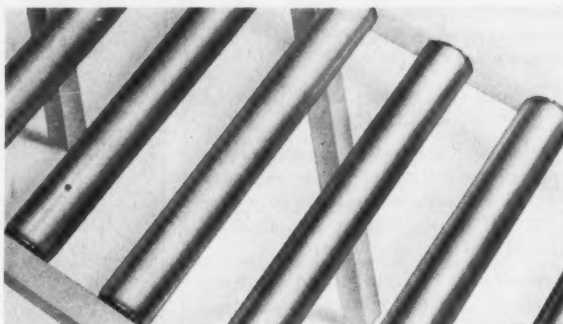


2706 Clinton Ave. • Cleveland 13, Ohio

When inquiring check CP 9197 on handy form, pgs. 2-3

FEBRUARY, 1952

MATERIAL HANDLING



Plastic armor coating on conveyor rollers presents contamination-free surface

eliminates the necessity for removing, cleaning, repainting and replacing — as with unprotected rollers.

(Dekoron is a product of Samuel Moore & Co., Dekoron Tubing Div., Dept. CP, Mantua, Ohio . . . or for more information check CP 9198 on handy form, pages 2 and 3.)

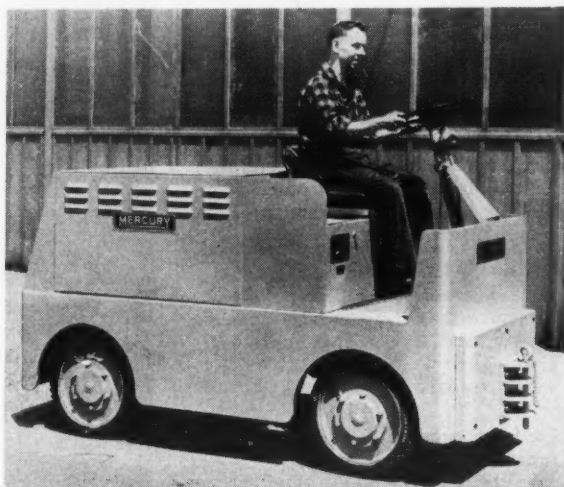
Four-wheel steering is aid to easy tractor handling towing heavy loads . . .

four speeds forward and reverse controlled by selective control on steering column

Uses: Assembly is designed especially for heavy-duty tractor service.

Features: Automotive wheel-type steering assembly and foot pedal accelerator. Drive shafts are full-floating and wheels are Timken-bearing mounted.

Description: Tractor is powered by two high-capacity, series-wound enclosed motors capable of delivering 800 lb



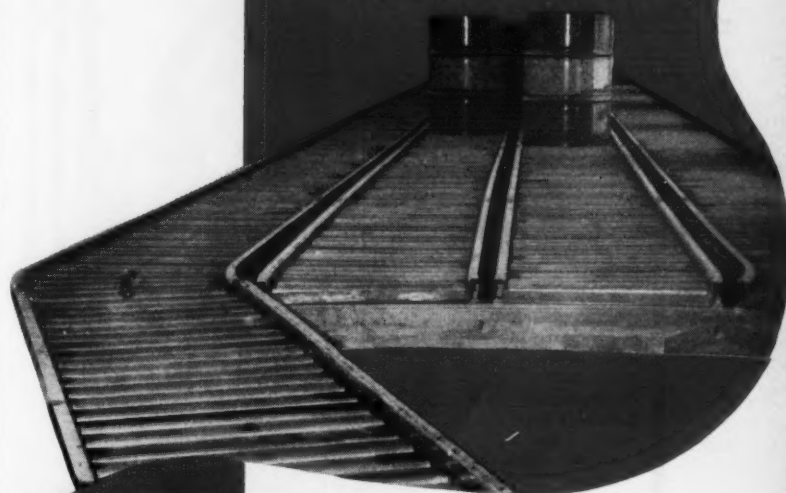
Four-wheel drive, four-wheel steer tractor

normal and 5500 lb maximum drawbar pull. Four-wheel drive, four-wheel steering unit embodies double reduction, spiral bevel and spur gears and standard four-pinion differential.

(Model A-800-4 tractor is built by The Mercury Mfg. Co., Dept. CP, 4044 S. Halsted St., Chicago 9, Ill. . . or for more information check CP 9199 on handy form, pages 2 and 3.)

what?

Store Drums on a Magazine?



everytime
you
manhandle
a package
you add
to the
cost of
the product
... so, put
your packages
on Alvey
conveyors.



Empty or full drums can be conveniently held on parallel gravity or power conveyors which comprise a storage magazine. Switch sections, either hand or power-located, can direct drums from a single source into any desired storage line. This storage magazine is but a single detail of the comprehensive array of units and devices Alvey engineers utilize to provide successful drum handling systems.

ALVEY

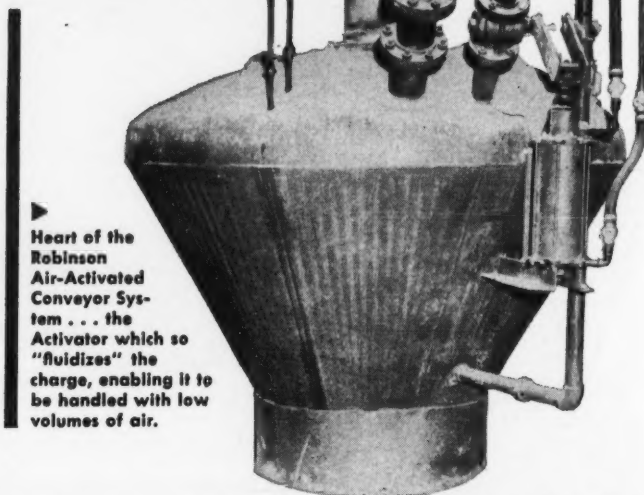
ALVEY CONVEYOR MFG. CO. • 9308 Olive Street Rd. • St. Louis 24, Mo.

WHEEL CONVEYORS • CHAIN CONVEYORS • BELT TABLE CONVEYORS • APRON CONVEYORS • SPECIAL INCLINED CONVEYORS • VERTICAL CONVEYORS • PUSH BAR CONVEYORS • BELT CONVEYORS • GRAVITY ROLLER CONVEYORS • VERTICAL CONVEYORS • PUSH BAR CONVEYORS • BELT CONVEYORS • WHEEL CONVEYORS • LIVE ROLLER

When inquiring check CP 9200 on handy form, pgs. 2-3

Robinson Air Activated Conveyor

The Low-volume
Air Conveyor



► Heart of the Robinson Air-Activated Conveyor System . . . the Activator which so "fluidizes" the charge, enabling it to be handled with low volumes of air.

Averages 1 Cubic Foot of Air per Pound of Materials Handled

Right here is one reason — and a stand-out reason — why the Robinson Air-Activated Conveyor is so economical in handling bulk dry-pulverized and fine-granular materials. Compressed air costs money so, if you can hold air costs down, as with the Robinson, you keep handling costs down. And no other power is necessary to operate a Robinson System.

The reason why the Robinson System can operate with such low air volume is due to the fluidized nature of the charge when transported through the pipes. Pressure alone will not suffice. It requires this Robinson Air-Activation or fluidizing effect. Material "flows" rather than blasts through.

Many Robinson Systems are in service handling a variety of products and in some cases are transporting them several thousand feet. This system may be just what you need for handling those dry, bulk materials in your plant. It has several outstanding features which we'll be glad to discuss at your convenience.

ROBINSON

Air Activated

A Division of
Morse Boulger Destructor Co.

CONVEYOR SYSTEMS

211-V EAST 42nd ST. • NEW YORK 17, N. Y.

Representatives in Principal Cities

When inquiring check CP 9201 on handy form, pgs. 2-3

MATERIAL HANDLING

Impart rust resistance to conveyor wheels and rollers . . .

built in gravity and powered types; standard lengths

Uses: For handling requirements where use of roller or wheel conveyors is indicated, especially where rust, corrosion, galling and abrasive conditions are encountered.

Features: Bearings and working parts are treated with a penetrating oil to insure a salt lubricated operation. This process also gives the equipment rust resistant qualities.

Description: Conveyors are built in both powered and gravity types. Standard lengths furnished in 10' and 5' sections. Other lengths are available at small additional cutting charge. Rollers and wheels have a distinguishing soft black color.

(Black Velvet conveyors are built by Oral T. Carter & Associates, Inc., Dept. CP, 1704 Dreman St., Cincinnati 23, Ohio . . . or for more information check CP 9202 on handy form, pages 2 and 3.)

Cutaways picture crane trucks

Two types of crane trucks are described and illustrated in this 6-page bulletin with the aid of cutaway photos of component parts to make construction details easy to follow.

One model shown has a rated capacity of 6000 lb at 7' radius; the other is 10,000 lb at 5½' radius. Complete engineering specifications and drawings are also included, along with action photos.

These machines are versatile, and they combine travel, hoisting, booming and slewing motions in a compact unit.

Bul 1613 is issued by Industrial Truck Division, The Baker-Raulang Company, Dept. CP, 1250 W. 80th St., Cleveland 2, Ohio. When inquiring specify CP 9203 on handy form, pages 2 and 3.

Tackles material feed from large hoppers and bins . . .

all-directional vibration provided without damage

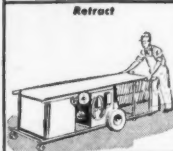
Uses: Movement of all material types that must be fed from hoppers and bins, including sand, gravel, chemicals, grains, coal, etc.

Features: Moves materials without damage to the faces of hoppers or bins; has only one moving part.

MODERN TIME AND COST SAVERS

BUILT BY...

Standard
GRAVITY & POWER
CONVEYORS

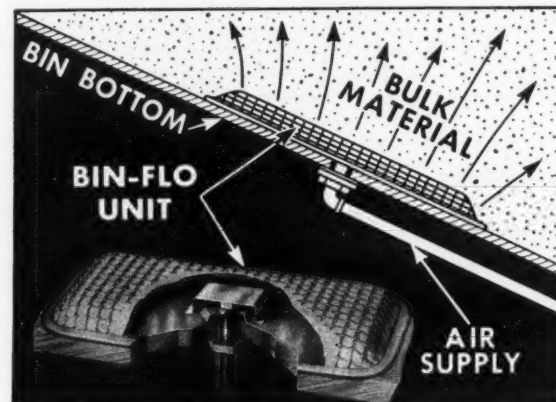


**SAVE TIME
LOADING — UNLOADING
WITH THE
E-X-T-E-N-D-O-V-E-Y-O-R**

This compact, mobile, easily maneuverable power-belt conveyor unit extends to 46 ft. in either direction and retracts to 9 ft. 10 in. Reaches into cars, trucks, trailers. Handles boxes, bags, bundles, cartons, crates, cases weighing up to 150 lbs. Available in two models — 1 way stretch and 2 way stretch — and 4 sizes. Write for Extenderoyor Bulletin—address Dept CP22

STANDARD CONVEYOR COMPANY
General Offices: North St. Paul 9, Minn.
Sales and Service in Principal Cities

When inquiring check CP 9204 on handy form, pgs. 2-3



BIN-FLO USES SMALL VOLUME OF AIR AT LOW PRESSURE

KEEPS BULK MATERIALS MOVING

BIN-FLO units in bins, chutes, hoppers, etc., restore flow characteristics to dry, finely ground materials which tend to pack or bridge in storage. Types for all materials and conditions. No moving parts; simple installation; negligible operating cost; no maintenance cost.

BIN-DICATOR bin level indicator—"The Eyes of the Bin"—automatically reports levels of materials in storage; automatically controls filling machines; prevents waste.

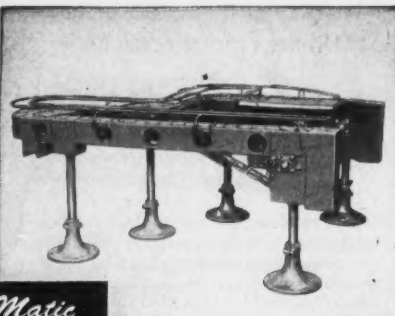
THE BIN-DICATOR CO.

13946-D Kercheval • Detroit 15, Mich.

**NEW
20-PAGE
BOOK
FREE**

When inquiring check CP 9205 on handy form, pgs. 2-3

Reduce
Handling
Costs!



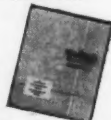
Styl-O-Matic
LATERAL CURVE
BOTTLE & CONTAINER
CONVEYOR

KEEPS PRODUCTION
FLOWING SMOOTHLY

A VERSATILE, economical unit for the food, dairy, beverage, etc. field. Conveys in straight line, around curves (0° to 180°) and up or down normal inclines or declines. Available in steel or stainless steel, with or without pack-off tables. Only one power unit is needed as there are no corner brackets.

WRITE FOR FREE BULLETIN

about this flexible, smooth operating unit that lowers costs and increases production. Ask for Bulletin No. ST-1. Dept. CP2



ISLAND EQUIPMENT CORP.
27-01 Bridge Plaza North
Long Island City 1, N. Y.

When inquiring check CP 9206 on handy form, pgs. 2-3

L-S "JACKSTACKER" TIERING TRUCK
The ONE and ONLY

1000 LB.
CAPACITY
TIERING TRUCK
with
these
OUTSTANDING Fork Truck FEATURES

TELESCOPIC and TILTING
130" HIGH LIFT 83" Collapsed Height
44" TURNING RADIUS
Extra Narrow Aisles
SHORTEST COUNTER BALANCED TRUCK
Less than 4 ft. long.
PRECISION DESIGN and MANUFACTURE
In our own shops. High pressure hydraulic system permits extra short 46 1/2" length.
NO GREASE POINTS

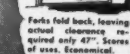
The ONLY Truck with
"ALL CONTROLS IN HANDLE HEAD"
2 speeds forward, 2 reverse. Electric brake. Tilt out and in. Lifting, Lowering, Horn, Lock . . . Operates with handle VERTICAL leaves extra special and in any other position.

For Distribution, Warehousing
Receiving and Shipping
WIDELY USED with chisel forks WITHOUT PALLETS
Write for Bulletin 24

LEWIS-SHEPARD

LEWIS-SHEPARD PRODUCTS INC. 146 WALNUT ST., WATERTOWN 72, MASS.
MIDWEST PLANT: Crawfordsville, Ind.

Sales and Service In Principal Cities

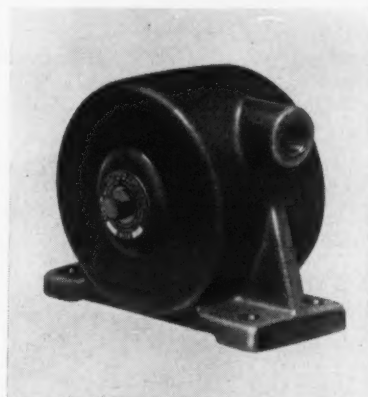


MATERIAL HANDLING

Description: Specified as the DV 51, the vibrator is a larger model added to manufacturer's "Vibrolator" line.

This vibrator has a 2" ball that weighs 1 lb — an increase of 66% over the largest type previously made by company. It was specifically designed to handle feeding problems arising with large hoppers and bins.

Operation is based on same principle



Pneumatically driven unit provides all-directional vibration

as other members of line — ball is pneumatically driven around a stationary hardened and finish-ground two rail race. DV 51 is easily installed and is stated to require practically no maintenance. Unit is instantly self-starting and quiet in operation.

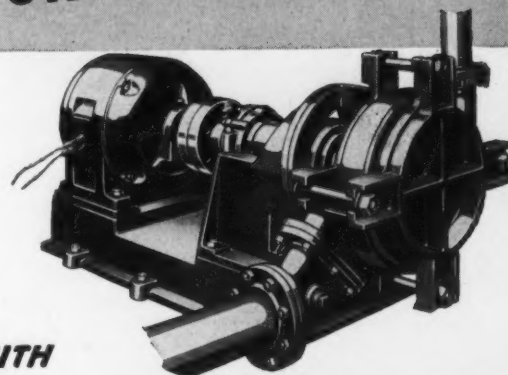
(DV 51 is a product of Martin Engineering Co., Dept. CP, Kewanee, Ill. . . . or for more information check CP 9208 on handy form, pages 2 and 3.)

22 models can pump
from 1/2 to 20 gpm

Pumps described in catalog are capable of handling, among others, such materials as putty, paint, adhesives, caulking and glue in all of their varying consistencies. They range in capacity from 1/2 to 20 gpm units.

Twenty two models of the manufacturer's "Tornado" pump line are detailed, and a chart is included for easy selection according to specific problems. Incorporating two air motors and five pump tubes, the models all pump from original containers holding from 5 to 55 gal. "Open the Door to Production" is issued by Alemite Division, Stewart-Warner Corp., Dept. CP, 1826 Diversey Pkwy., Chicago 14, Ill. When inquiring specify CP 9209 on handy form, pages 2 and 3.

Longer Hours of...
CONTINUOUS SERVICE



WITH
A

MORRIS TYPE R
SLURRY PUMP

The 4 features of the Morris Type R Slurry Pump mean low-cost operation . . . minimum "lay up" time.

- 1 **Easily dismantled**—Impeller and shaft sleeve are renewable without disturbing piping or bearings.
Four easy-to-get-at outside clamping bolts hold impeller, liner, shell and cover firmly in place.
- 2 **Simpler design**—The Morris Type R Slurry Pump has no troublesome internal bolts or studs.
Gland is under suction pressure only. Hence, it's less vulnerable to abrasive solids . . . less subject to packing troubles.
Four adjusting screws close the worn clearances on the suction side of impeller. This adjustment moves the entire rotating assembly as a unit.
- 3 **Corrosion-abrasion resistant**—You may have the Morris Type R with its moving parts in any of various metal alloys, depending upon the kind of slurry you handle. Parts are quickly interchanged.
- 4 **Shell is interchangeable for right or left-hand rotation**—Permits 72 different combinations of suction and discharge nozzles.
- 5 **FREE TECHNICAL SERVICE**—Morris Engineers have been building pumps for more than 80 years. They will be glad to recommend the pump best suited to your needs. No charge or obligation.

FOR LESS TROUBLE...
LESS MAINTENANCE...
LESS LAY-UP TIME...

and LONGER HOURS OF
CONTINUOUS OPERATION

Specify
MORRIS TYPE R
SLURRY PUMP

MORRIS MACHINE WORKS
Baldwinsville, N. Y.
Branch Offices in Principal Cities

MORRIS Centrifugal Pumps

When inquiring check CP 9210 on handy form, pgs. 2-3

When inquiring check CP 9207 on handy form, pgs. 2-3

FEBRUARY, 1952

SYNTRON VIBRATORY FEEDERS

CAN IMPROVE
YOUR MATERIAL HANDLING

FEEDING:

Bichromate Potash, Silica
Jel... to Rotary Dryer...

Batches of Chemicals to
solution tanks...

Costly photographic
chemicals to drums...

Sal Ammoniac, Lead
Oxide... to bagging
machines...

Zinc Oxide to crushers
and grinders...

Hydrated Lime, etc., for
blending to mixers...

Model F-22 Feeder, in a Chemical Plant,
regulating feed to belt conveyor.

Syntron Vibratory Feeders provide an efficient economical method of conveying bulk chemicals and the simplest and easiest means of controlling the rate of flow. Their variable control of rate of flow offers a variety of feed rates from pounds to hundreds of tons per hour at fingertip dial control.

Available in a number of models and trough styles that are readily adaptable to many processing systems — and that will obtain maximum full load of the potential capacity of crushers, grinders, screens, mixers etc. — increasing their efficiency.

other SYNTRON products

Designed with Your

Problems in Mind

ELECTRIC VIBRATORS

LONG
VIBRATING CONVEYORS

VIBRATORY
FEEDERS

Get the full facts on Syntron Equipment — See their diversified applications

Write for FREE illustrated Catalog No. 519

SYNTRON COMPANY

110 Lexington Avenue

Homer City, Penna.

When inquiring check CP 9211 on handy form, pgs. 2-3

MATERIAL HANDLING

Maintenance supplies
moved to machines
into 2-deck cart...

handles a variety of parts and
miscellaneous items

Uses: Handles a variety of small items and is especially useful in carrying parts, tools and maintenance materials.

Features: All-welded construction. Equipped with tubular handles at swivel end.

Description: Built of sheet steel and angle iron. Overall measurements: length 30", width 16", and height 32". Top deck is 2" deep,



Machine tender cart

lower deck 3" deep. All edges are turned. Mounts on 5 x 1" plain bearing wheels. Cart can also be furnished with rubber tired wheels. Weight is approximately 65 lb.

(Machine tender is built by The Palmer-Shile Company, Detroit 27, Mich. ... or for more information check CP 9212 on handy form, pgs. 2 & 3.)

Handling 4 million lb of stores/month

Two-page sheet is a case history report of what industrial trucks—fork and platform—are accomplishing in a utility plant. Some 4 million lb of stores per month consisting of items of all shapes and sizes are handled. Benefits cited include: inside and outside storage areas used to better advantage, faster supply service to 36 district warehouses, receiving platform tie-ups eliminated, and reduction in overall per-ton cost of handling.

Twelve photographs show the trucks in action. Report 3061 is issued by Baker Industrial Truck Division, The Baker-Raulang Co., Dept. CP, 1250 West 80th St., Cleveland 2, Ohio. When inquiring specify CP 9213 on handy form, pages 2 and 3.

Save time! Prevent accidents!

LIFT AND DUMP MECHANICALLY

BAGS
BARRELS
DRUMS
BOXES

REDUCE HANDLING COSTS with a CESCO Dumper. It handles up to 100 loads per hour; has a lifting cap. ranging from 100 to 1500 lbs. Both single- and multi-purpose portable models are built in standard dumping heights from 5 to 12 ft. Stationary models up to 16 ft. dumping heights. Push button controlled. Write for catalog.

COLSON EQUIPMENT & SUPPLY CO.
1317 Willow Street • Los Angeles 13, California



When inquiring check CP 9214 on handy form, pgs. 2-3

Ship Chemicals? Use NORCO Barrels and Kegs



NORCO PACKAGES

Have definite advantages as containers for many hard-to-hold liquids, foods and chemical products. Micro-crystalline and other linings are available.

- Tight grained and non-porous.
- They are "stable"—minimum of shrinkage or swelling.
- They stand up unusually well in storage.
- Low tare weight.

Typical Usages: Phosphoric, acetic, sodium acetate and acid solutions.

In these sizes: 5, 10, 15, 30 and 50 gallon.

Most sizes are available in I.C.C. Specifications.

Write for Unit NC 3 CP.
PUT YOUR PRODUCT IN SANITARY WOODEN BARRELS
Manufacturers of the largest variety of
wooden barrels and kegs in America.

NORTHERN COOPERAGE CO.

551 Concord St. — St. Paul 7, Minn.
Riverview 4900
Division of Greif Bros. Cooperage Corp.

When inquiring check CP 9215 on handy form, pgs. 2-3

CHEMICAL PROCESSING

MATERIAL HANDLING

Labor of loading elevators avoided when conveyor moves cases between floors . . .

25' belt-type installation reverses quickly; stops platform bottlenecks to speed handling shipments

Problem: At Norton Company, Philadelphia, Pa., crated and otherwise packaged abrasive wheels are continuously moving in and out of storage. Use of elevator to carry this material to and from basement storage involved a number of manual operations that could not be synchronized. This caused a pile-up of boxes and packages at shipping platform.

Solution: A 25' belt conveyor was installed. Incoming abrasive wheels, weighing 100 to 400 lb are taken from highway trucks and placed on the conveyor for transfer to basement storage. Merely reversing conveyor permits it to move outgoing packages to shipping platform. A trap door is suspended above the opening in shipping platform floor provided for conveyor.



Conveyor moves crates weighing 100 to 400 lb

A fuse in the door's suspension chain is melted by abnormally high heat. This drops fire door to control drafts.

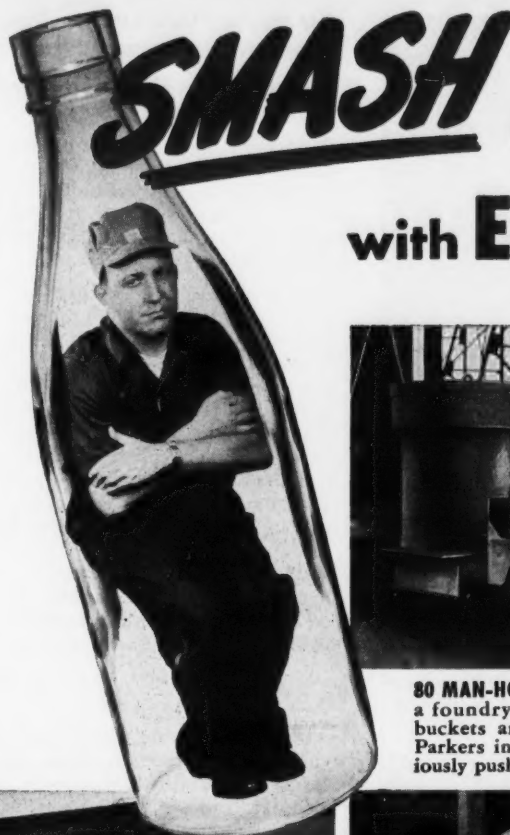
Results: Conveyor makes possible continuous flow to and from storage. Three steps are eliminated: 1) loading elevator; 2) taking elevator up and down; 3) unloading it. Average truck shipment can now be unloaded and stored in 1½ hours. Congestion in shipping platform eliminated.

(Belt conveyors are built by Lamson Corp., Dept. CP, Syracuse, N. Y. . . or for more information check CP check CP 9216 on handy form, pages 2 and 3.)

Specifies 2000 lb capacity platform truck

Two-page sheet describes this electric truck which has a platform with 23 sq ft of loading area and a capacity of 2000 lb. Stake pockets are located at both sides and rear to make possible use of racks for containing irregular loads. Driver's seat and battery compartment can be positioned so that long loads such as pipe and bar stock can be carried. Truck is manufactured in two overall lengths: 91 and 109". Bul FP-20 is issued by Automatic Transportation Co., Dept. CP, 149 W. 87th St., Chicago 20, Ill. When inquiring specify CP 9217 on handy form, pages 2 and 3.

FEBRUARY, 1952



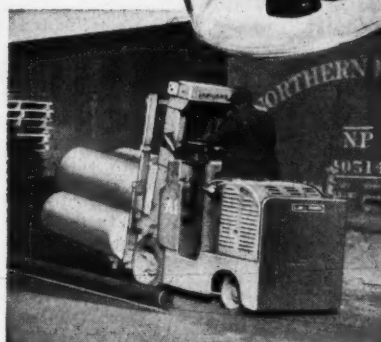
Man Power Bottlenecks with ELWELL-PARKER Trucks



80 MAN-HOURS SAVED DAILY at a foundry now that charging buckets are carried by Elwell-Parkers instead of being laboriously pushed on hand trucks.



SAVES TIME OF 4 MEN—At a concrete plant, handling in Master Unit Loads by an Elwell-Parker enabled four men to be shifted to more productive work.



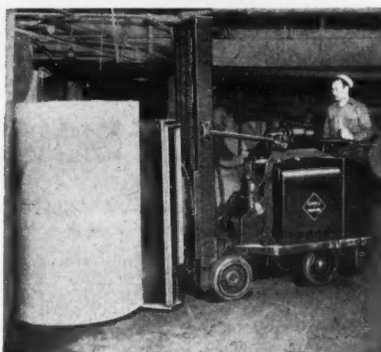
ONLY 5% OF PREVIOUS MAN-HOURS—8 men with hand trucks took 3½ hours to load boxcar with 800-lb. rolls. Now truck operator and helper do job in 40 minutes!



TRUCK EQUIVALENT TO 30-MAN GANG—E-P truck with powered scoop transports bulk salt 7½ times faster than 4 men using wheelbarrows.



42 MEN DO 60 MEN'S WORK—That cut in the handling force at a grain mill was made after installing an E-P pallet retriever fork truck.



FREED FOUR MEN—This E-P roll handler moves tons of newsprint. It released four men for other duties; paid for itself in 14 months.

Do you waste scarce and costly labor, moving materials by "muscle power"? If so, you are overlooking an opportunity to capitalize on Elwell-Parker's *inbuilt know-how*—proved effective in the typical labor savings illustrated above.

Act today to meet the ever-growing manpower shortage . . . call in your **MAN** now. The Elwell-Parker Electric Co.,

4014 St. Clair Ave., Cleveland 3, Ohio.

FREE HANDBOOK on Scientific Materials Handling. Write for a copy of "Industrial Logistics", naming your product.

ELWELL-PARKER
POWER INDUSTRIAL TRUCKS

Established 1893



When inquiring check CP 9218 on handy form, pgs. 2-3

*Rx Cure for
a handling
headache*

Buschman "CONVEYOR"

FILLS GAP IN HIGH SPEED
Alka-Seltzer PRODUCTION LINE

- ★ Eliminates Manual Handling
- ★ Minimizes Breakage
- ★ Handles 200 Glass Bottles per Minute
- ★ Saves Space

Bottles of Alka-Seltzer tablets were being produced on a new line at a 50% increase . . . 200 glass bottles per minute. Production bottleneck however existed between filling and final labeling . . . bottles were moved from second to first floor via trucks and elevator by twelve workers on three shifts.

Now, without handling, bottles move on a slat conveyor to the Buschman lowering machine and are spiralled quickly and gently to labeling machine on floor below. Completely engineered by Buschman this conveyor easily handles the increased production, occupies just 1½ square feet of floor space.

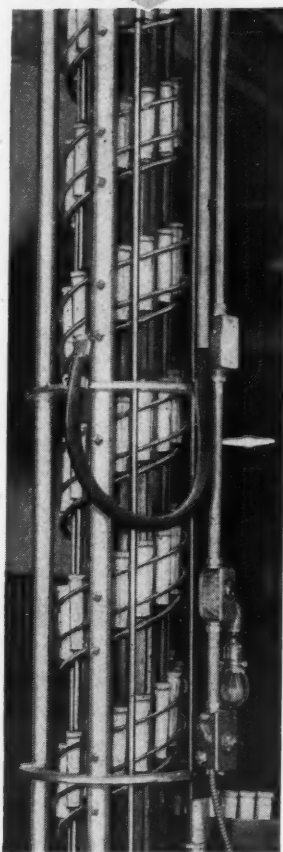
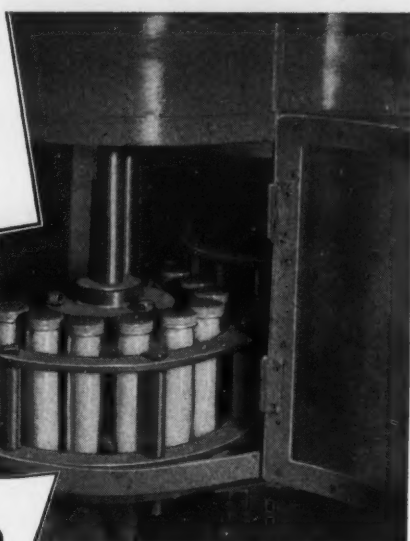
Ingenious solution of handling problems is a Buschman specialty based on long experience moving practically any product or part faster, easier and at lower cost. Write for detailed literature describing standard section "Roll-or-Wheel," Overhead Cable, and Engineered Conveyors.

PRODUCE MORE . . . FOR LESS

Buschman
Conveyors

THE E. W. BUSCHMAN CO., INC.

Spring Grove & Clifton Aves.
Cincinnati 32, Ohio



MATERIAL HANDLING

Dimensions, weights, hp charts on oscillating conveyors

Two-color, 24-page bulletin has as its topic the manufacturer's oscillating conveyors which can be used for conveying, feeding, cooling and screening a great variety of loose bulk materials. Dimensions, weights, capacity and horsepower charts are given for both heavy- and light-duty units.

Conveyor assembly consists of a continuous, one-piece metal trough, mounted on resilient supports, which is given an upward and forward oscillating motion by a constant-stroke eccentric drive. Trough widths of standard conveyors range from 8 to 48 inches, and the handling capacities from a few pounds to several hundred tons per hour. Conveyors are applicable to the handling of cement clinkers, metal chips, silicon carbide, coal, ores, chemicals, etc. Bul 2444 is issued by Link-Belt Co., Dept. CP, 307 N. Michigan Ave., Chicago 1, Ill. When inquiring specify CP 9220 on handy form, pages 2 and 3.

Training programs for drivers of industrial trucks can save millions of man hours . . .

teaching basic operations, good practices neglected; suggested 17-point code provides helpful guide

Training programs for industrial truck drivers return their actual cost many times over. Yet, except for the larger organizations, training is frequently so haphazard as to cost industry millions of manhours per year. Companies using industrial trucks should avail themselves of the opportunity to have truck operation explained and demonstrated by truck manufacturer representatives, especially when new trucks are delivered.

Before he ever gets onto a truck, any operator should understand its functions, abilities, limitations and know its capacity. He should be thoroughly familiar with location of controls and how they work. In many cases, it is necessary to impress new drivers that an industrial truck is not in all ways like an automobile. He must be made to realize that the load in front makes a big difference in judging distance and speed and in degree of visibility. Also to be remembered is that when there is no load in front of the truck, the counterweight at the rear makes a big difference in the handling of the truck.

It is proposed that a three-day training period be given. First day should be spent in practicing alone with an unloaded truck. A "laboratory class," held during this day, should stress controls, permissible speeds and smoothness of operation. The next day, actually handling loads should be attempted. Then the new driver can gradually begin to work into the area to which he will be permanently assigned. All this will teach him to cope with traffic problems, the speed at which to work and picking up and delivering loads. The third day, the new driver is on his own.

A good code which, when followed, should make for excellent driving may be summed up in the following seventeen points. (1) Keep body inside running line of truck. (2) Do not permit any passengers to ride on truck. (3) Keep to right of aisles whenever possible. (4) Slow down when vision is obstructed. (5) Stop at doors, corners and exits and sound horn. (6) Use horn when approaching pedestrians. (7) Start, stop and turn gently — not suddenly. (8) Always face in direction of travel and before backing up look in direction you will go. (9) Carry only loads for which truck

What's "A New Solution"?

It's an article in
**CHEMICAL
PROCESSING**
describing a new way
of solving a tough
plant operating
problem.

In each
issue you will find
specific "case
histories" showing
how these processing
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Each article
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operating problem
... explains the
process used
... gives details of
how problem was
solved
... shows results
secured.

Take a look at
"New Solutions"
articles beginning on
page 8 in this issue—
they might suggest
a "solution" for
some of your tough
processing problems.



What type of
**CUSTOM BUILT
WIRE CLOTH
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You can be sure of getting exactly what you need in custom built wire cloth parts when you call—

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With more than 30 years experience in this field, we can work from your own prints . . . or, if none are available our design engineers will draw up prints based on your description of the job the part must do.

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FREE CATALOG describes Cambridge facilities for fabricating metal specialties. Write for your copy today.



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WIRE CLOTH **METAL CONVEYOR BELTS** **SPECIAL METAL FABRICATIONS**
OFFICES IN PRINCIPAL INDUSTRIAL CITIES

When inquiring check CP 9221 on handy form, pgs. 2-3

FEBRUARY, 1952

MATERIAL HANDLING

is designed. (10) Keep loads below eye level, carrying them just clear of floor. If load blocks vision, it should be trailed except on sit-down model trucks. This problem can be avoided by selection of correct truck for load. (11) Do not drive highlift trucks with platform or forks elevated. (12) Bent or damaged loading plates should not be used. (13) Do not attempt to use reverse controls as a substitute. (14) Do not drive when hands are wet or greasy. This could result in loss of control of steering wheel. (15) Proceed slowly over wet or slippery floors. (16) Never engage in stunt driving or horseplay. (17) Always return trucks to parking area or to charging station at end of the shift.

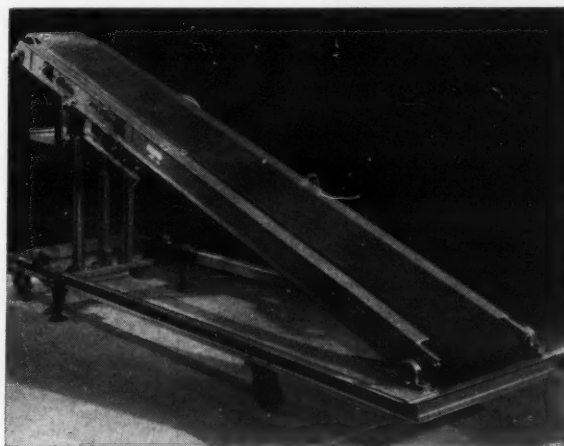
Drivers should not be suddenly switched from their regular truck to another with which they are not familiar. In addition to good operating practices another precaution that is desirable is adequate route marking on floors and walls. These serve to warn workers walking through plant that trucks are around. Warning markers at difficult ramps, blind corners and low clearance opening also contribute to safety. (Summarized from data compiled by J. L. Van Car-Automatic Transportation Co., Dept. CP, 149 West 87th St., Chicago 20, Ill. . . . or for more information check CP 9222 on handy form, pages 2 and 3.)

Adjusting to height of box car or highway trailer, conveyor speeds loading, unloading . . .

eases job of handling crates, boxes at plants with no loading dock; raises, lowers hydraulically

Uses: Designed especially to speed loading and unloading of trucks and freight cars where loading dock is not provided.

Features: Easily mobile and quickly locked into position, conveyor is supported to withstand heavy loads



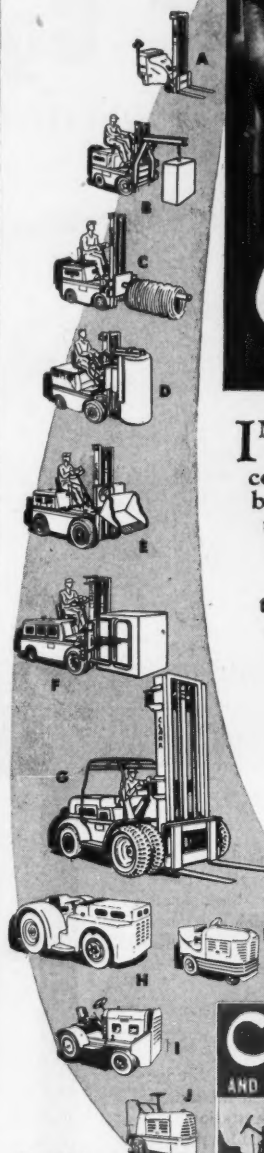
Conveyor designed for easy pick-up of cases

and shocks. Hydraulic adjustment mechanism simplifies raising or lowering to required height.

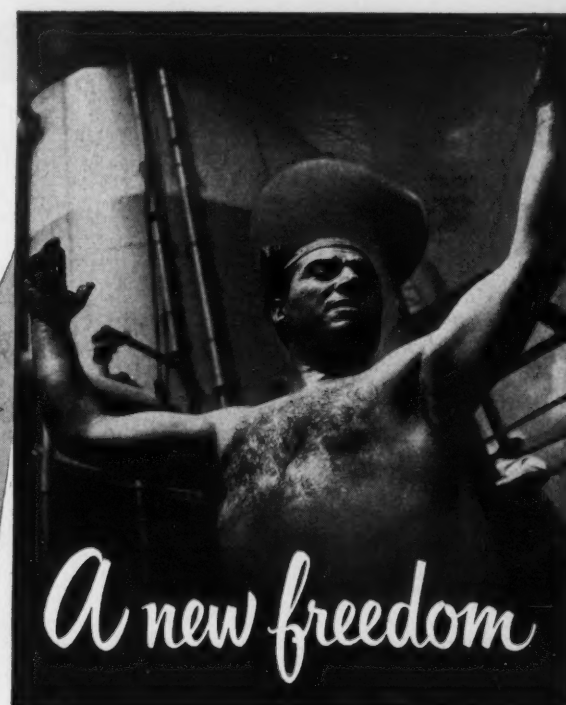
Description: Lower end of conveyor is designed so that cartons or crates can be wheeled up on end by truck and with a flick of the wrist, they can be guided over and onto belt.

(Loading conveyors are built by Speedways Conveyors, Inc., Dept. CP, 1264 Niagara St., Buffalo, N. Y. . . . or for more information check CP 9223 on handy form, pages 2 and 3)

Across the face of the World a new Freedom spreads . . . like a strong man's smile . . . a Freedom from heavy burdens . . . a Freedom from beastly toil . . . a Freedom from useless costs . . . a Freedom from waste and spoil . . . It is a Freedom brought by Machines . . . and by Methods created by Men who engineer history for the greatest good of their Kind.



These Clark publications will help you and your workmen to enjoy the many benefits of this New Freedom. Any one—or all—of them will be sent to you upon request



A new freedom

IN A WORLD divided by Iron Curtains and conflicting ideologies, it is refreshing to contemplate a better tomorrow made possible by a new-found freedom available to all—the Freedom from Toil, a Freedom springing from the use of modern machines.

The Clark Equipment Company is proud to have contributed to the emancipation of the laboring man through the development and creation of machines to bear his most exhausting physical burdens.

- ① Electric-Powered HAND TRUCK with Stacker. ② TRUCKLOADER with CRANE Attachment—1000 lb. cap.—gas or electric power. ③ CLIPPER with KAM Attachment—2000 lb. cap.—gas or electric power. ④ CARLOADER with BARTEL Device—3-4-5000 lb. cap. gas or electric power. ⑤ YARDLIFT with SHOVEL Attachment 2-4-6000 lb. cap. gas power only. ⑥ UTILITRUC with CLAMP Attachment 6-7-10,000 lb. cap. gas or electric power. ⑦ YARDLIFT—150 with Standard Forks 15,000 lb. cap. gas power only. ⑧ CLARKTOR—100-10,000 lb. draw bar pull. ⑨ CLARKTOR—47 to 104 tons hauling capacity on level. ⑩ CLARKETTE—5-10 tons hauling capacity on level. ⑪ CLARKAT—42 to 58 tons hauling capacity on level. ⑫ TRUCKTRACTOR—Dump model 4000 lbs. capacity. ⑬ TRUCKTRACTOR—Tip-model 4000 lbs. capacity.

CLARK ELECTRIC AND GAS POWERED FORK TRUCKS AND POWERED HAND TRUCKS - INDUSTRIAL TOWING TRACTORS



INDUSTRIAL TRUCK DIVISION • CLARK EQUIPMENT COMPANY • BATTLE CREEK 9, MICHIGAN
Please send: ☐ Movie Digest ☐ Safety Saves ☐ Basic Facts
☐ Material Handling News

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AUTHORIZED CLARK INDUSTRIAL TRUCK PARTS AND SERVICE STATIONS IN STRATEGIC LOCATIONS

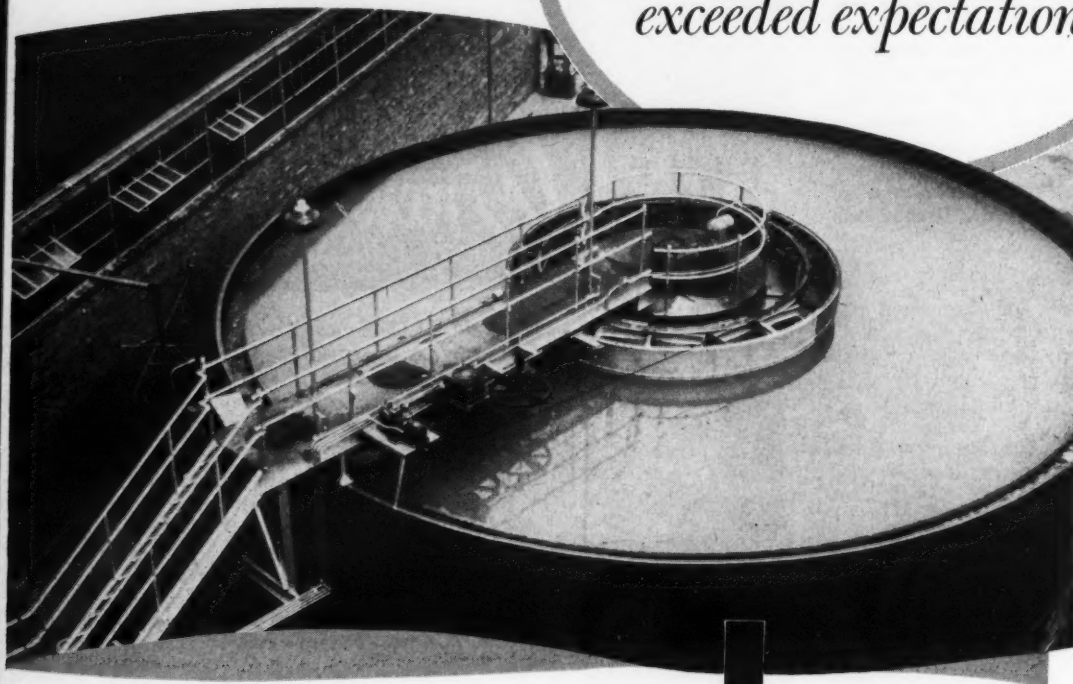
When inquiring check CP 9224 on handy form, pgs. 2-3

The Norristown Magnesia and Asbestos Company had a difficult problem in the treatment of its asbestos fiber wastes. It experimented with many methods. A Cyclator pilot plant proved that it could meet the problem... and the actual installation is surpassing pilot plant results!

Norristown Magnesia and Asbestos Company Cyclator.
Gilbert Associates, Inc.,
Consulting Engineers



Where others failed...
Cyclator[®]
exceeded expectations



THE PROBLEM

Treatment of asbestos fiber wastes from mill board, insulation and wool felt products containing varying amounts of talc, carbon black and scrap material. Problem further complicated by shock loads occasioned by dumping of beaters without warning, which increased per cent of solids 2 to 3 times.

THE SOLUTION

Installation of a 45-foot diameter Cyclator and a Vortex Grit Remover.

THE RESULTS

Suspended solids reduction ranging from 94.5% to 99.7%. Sludge concentration is easily held to between 1.5 and 2.5% by weight of solids which can be conveniently handled. Higher concentrations are possible, up to 6% having been obtained. Effluent is re-used for process water. Grit is removed from fibers, so that sludge can be re-used in mill.



INFILCO INC. Tucson, Arizona

Plants in Chicago & Joliet, Illinois

FIELD ENGINEERING OFFICES IN 26 PRINCIPAL CITIES

World's Leading Manufacturers of Water Conditioning and Waste Treating Equipment

When inquiring check CP 9225 on handy form, pgs. 2-3

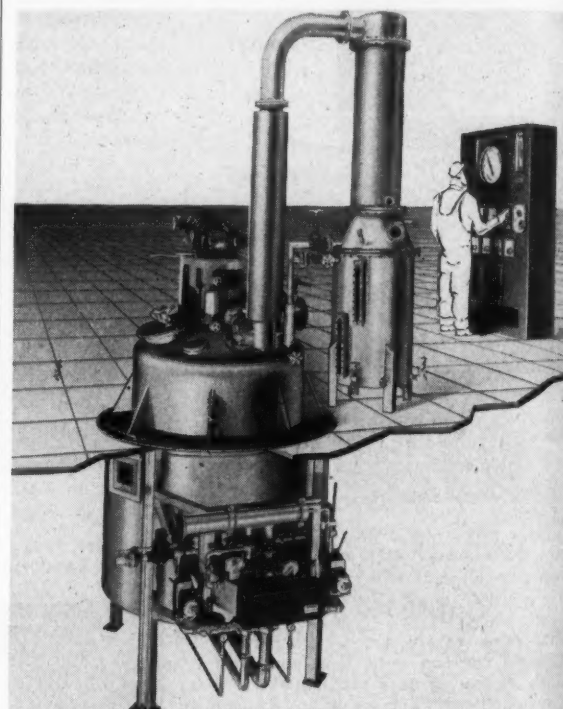
Processing

Synthetic resins are made in 1000-gal stainless kettle . . .

all necessary safety and control devices are included
Uses: Manufacture of synthetic resins.

Features: Kettle is built of stainless steel and is for operation under vacuum, or pressures up to 40 psi. Furnace has all the necessary safety features. Burners shut off automatically upon failure of pilot flame, gas or electricity.

Description: 1000-gal synthetic resin kettle has push-button automatic pilot flame ignition and pushbutton con-



Synthetic resin kettle holds 1000 gal

trol that admits cooling air to temperature-control when burners are shut off. Jacketed cylinder is inside the kettle for cooling contents. Signal lights indicate every stage of burner operation. A high-sensitivity electronic recorder-controller is included. Choice of two-speed or variable-speed agitator drive is offered.

(Made by Brighton Copper Works, Inc., Dept. CP, 820 State Ave., Cincinnati 4, Ohio . . . or for more information check CP 9226 on handy form, pages 2 and 3.)

Feeds small amounts of solids within one or two percent of constant rate . . .

photoelectric control embodied in rugged feeder for 3 to 60 lb/hr proportioning

Uses: Feeding solid materials at a controlled rate.

Features: Range is 3 to 60 lb/hr; accuracy at 3 lb/hr is 2% based on two-minute run, at 60 lb/hr, 1% based on two-minute run. On longer runs, of course, accuracy improves.

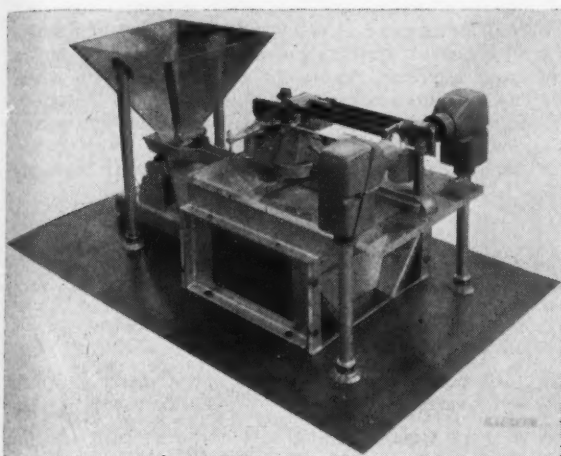
Description: Waytrol constant weight feeders are based

CHEMICAL PROCESSING

Equipment

on the balance principle. Material is delivered from a hopper by a vibrating electric feeder. It falls on a "weigh-belt" which corresponds to one arm of the balance. Other arm is a standard weighing beam with sliding weights. Position of beam controls the vibrator feed rate through an on-off control.

In the tiny 050 Waytrol, the weighbelt is only 6" long. A small synchronous motor drives it at a constant 6" per min. Over-and-under element is a frictionless photoelectric circuit. As shown in photo, the beam position



Photoelectric units may be seen on either side of beam at the right of photograph

registers on a photocell. In addition to controlling power to the vibrating feeder, the photoelectric circuit operates an alarm system to stop operations if feed to the weighbelt is interrupted.

Photoelectric control is the chief innovation in this small feeder. The 050 completes a long series of similar equipment, the largest units of which handle as much as 1,500,000 lb/hr with 1% accuracy.

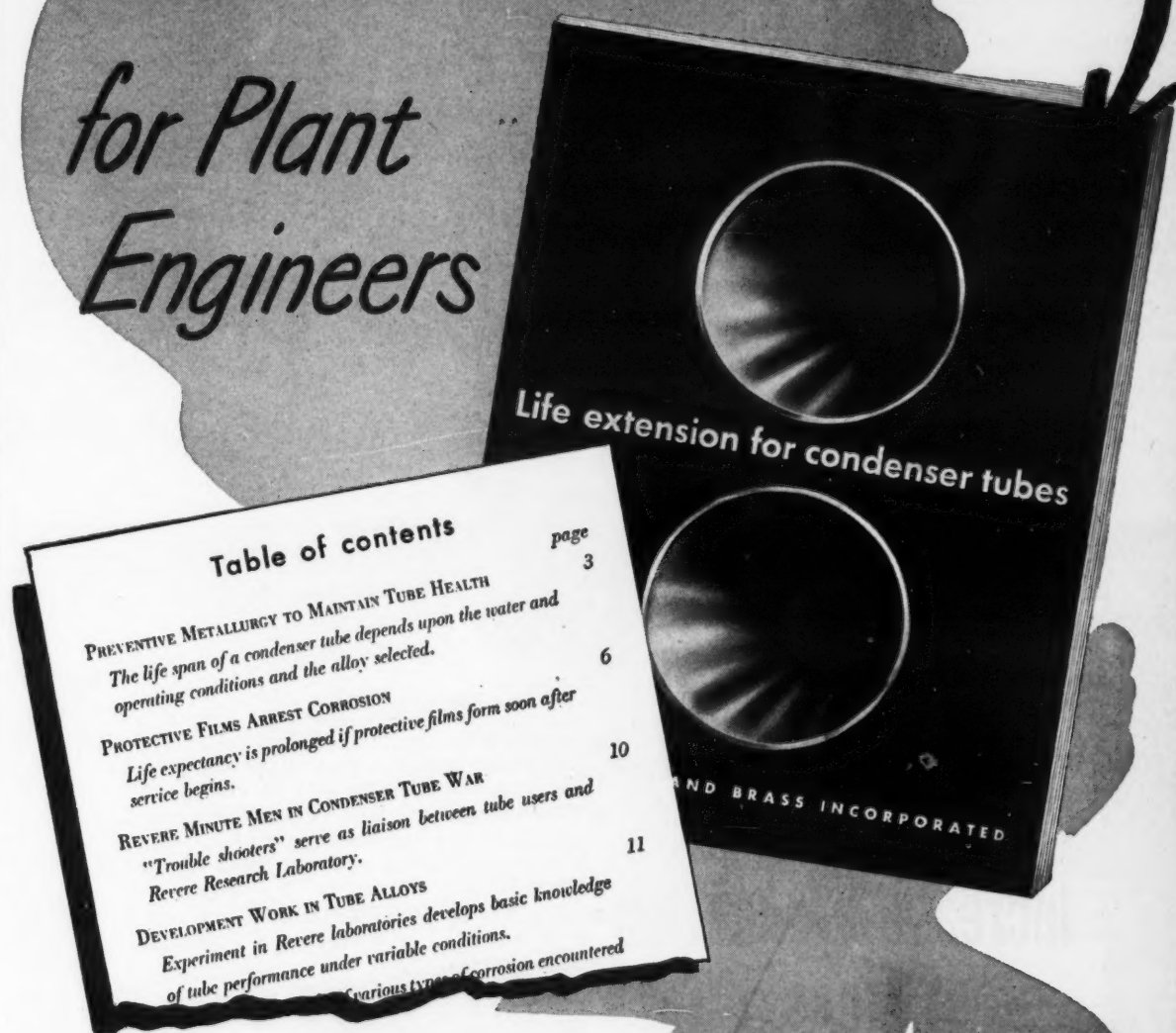
(Designed and built on order only by The Jeffrey Manufacturing Company, Dept. CP, Columbus 16, Ohio . . . or for more information check CP 9227 on handy form, pages 2 and 3.)

Explains construction and use of building heat controller

Printed in two colors, this four-page, illustrated bulletin describes a controller unit for governing building temperature according to weather requirements as well as inside temperature. Annotated photograph shows components of this control device which can be used with oil, gas or coal heating systems. Almost any final control element can be fitted into the controller. Examples of these elements are fans, motor valves and circulating pumps. Clearly written text explains the many adjustments that may be made to insure efficient control in special cases.

An isometric drawing shows a complete heating system with the controller installed. This is a typical case—employing an oil burner and radiant panel heat. "Weather-Flo" is issued by Automatic Devices Co., Inc., Dept. CP, Western Springs, Illinois. When inquiring specify CP 9228 on handy form, pages 2 and 3.

"MUST" Reading for Plant Engineers



• We doubt very much if you have ever read a booklet on Condenser Tubes, quite like this one.

Plant engineers should find it of unusual interest particularly with present restrictions on copper and its alloys making it more important than ever that every last ounce of use be squeezed out of the condenser tubes in their plants.

This 28-page booklet includes data on various copper alloys, photos of cut-away tube sections showing various types of corrosion encountered in condenser tube service and photomicrographs showing the grain structure of different kinds of metals under varying operating conditions.

Send for your copy today. Please make request on your firm's letterhead. Thank you. Address Department P.R., Revere Copper and Brass Incorporated, 230 Park Avenue, N. Y. 17, N. Y.

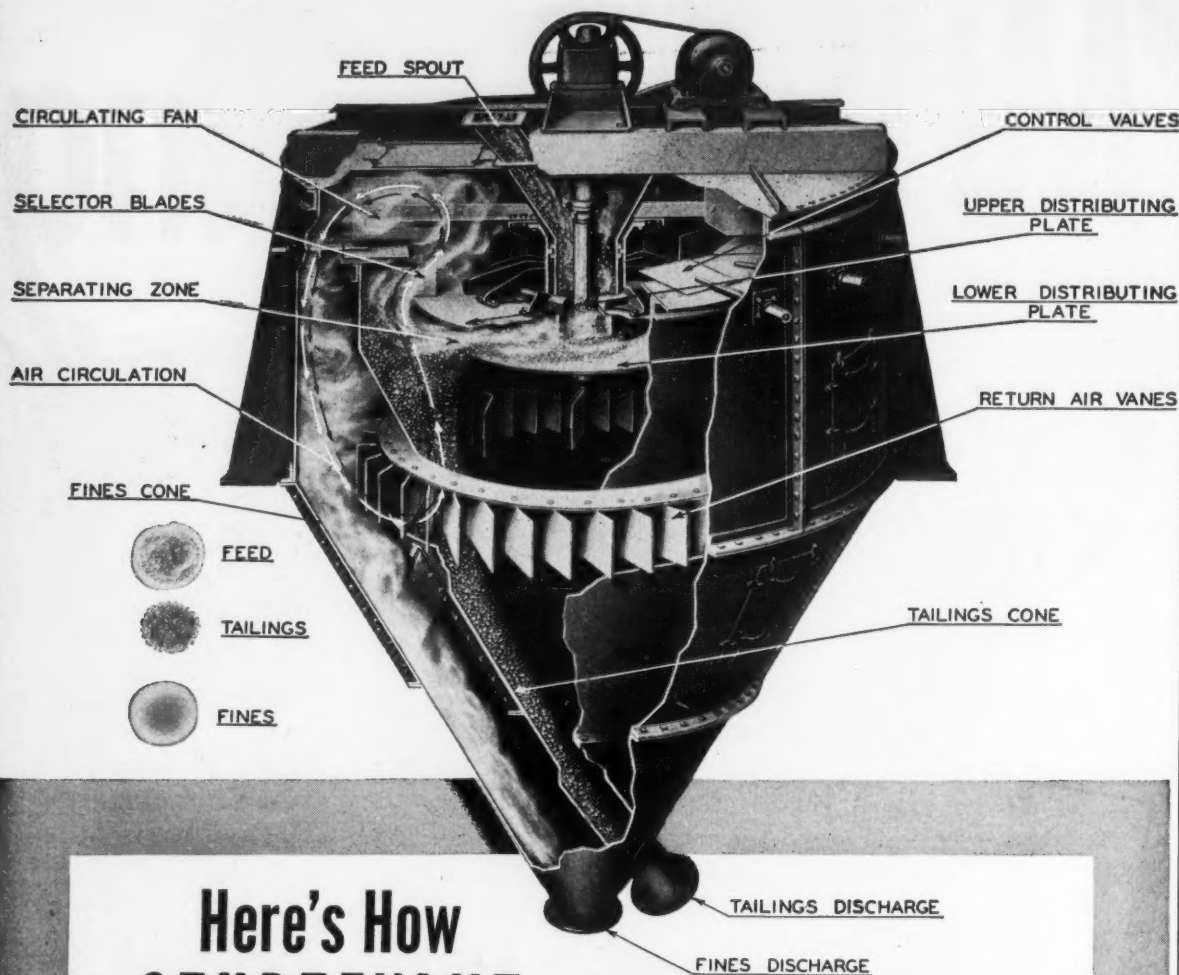
REVERE 150TH YEAR OF SERVICE TO AMERICA
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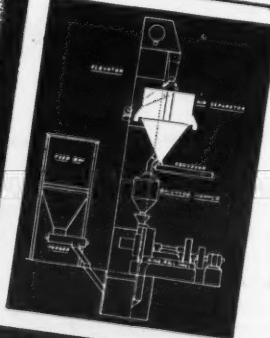
When inquiring check CP 9229 on handy form, pgs. 2-5



Here's How STURTEVANT Air Separators Increase Production of Fines... Lower Separation Costs

- Sturtevant Air Separators effect production savings by increasing output by 25 to 300% ... reducing power consumption by as much as 50%.
- They efficiently carry off all classified materials in any desired fineness from 40 to 325 mesh and finer ... eliminate the need of screening in certain applications.
- Capacities available from $\frac{1}{4}$ to 50 tons per hr.

Write for full details, today.



Sturtevant Air Separator in "closed circuit" with pulverizer. This combination increases tonnage and reduces costs in all types of industry.

Sturtevant Mill Company

119 Clayton Street, Boston 22, Mass.

Designers and Manufacturers of: CRUSHERS • GRINDERS • SEPARATORS • CONVEYORS • MECHANICAL DENS and EXCAVATORS • ELEVATORS • MIXERS

When inquiring check CP 9230 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Shows dust collection set-ups in various industries

Eight-page booklet tells the story of self-cleaning, bag type dust collector that incorporates reverse jet cleaning ring and claims high filter rates and easy handling of heavy dust loads. Filter medium is wool felt cylinder. Cutaway view explains principle of operation, and a table lists dimensions, filter areas (from 130 to 4280 sq ft), and capacities (from 1950 to 64,200 cfm).

Drawings and photographs explain how the unit is serving on specific jobs at various plants. Brief "problem-solution" type stories emphasize how collector can be used in pneumatic conveying system carrying material from pulverizer or other piece of equipment to bagging or storage. Air movement in conveying duct is maintained by fan in collector. Literature points out manufacturer's lab where he tests submitted samples in pulverizers and collectors. "Don't Let Dust Be Your Destiny," issued by Pulverizing Machinery Co., Dept. CP, Chatham and River Roads, Summit, N. J. When inquiring specify CP 9231 on handy form, pages 2 and 3.

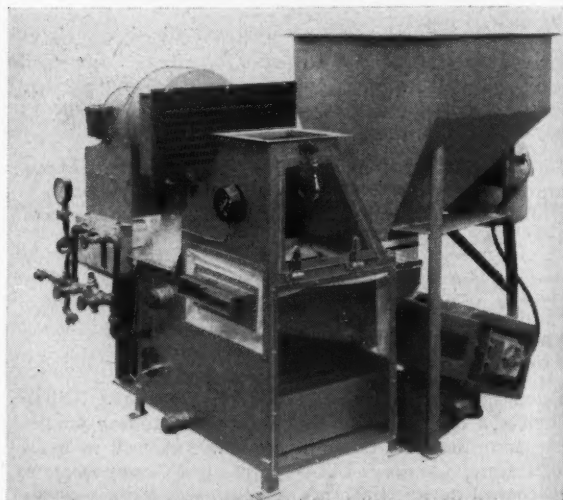
Vibration separates, fluffs material being dried ...

continuous drying unit has controllable temperature, air rate, and retention time

Uses: For process and final drying of materials which can be conveyed by vibration. Can also be used as cooler.

Features: Gentle fluffing and fluidizing effect of the vibration produces fast, efficient drying (or cooling) without contamination, material degradation, or loss of color or luster.

Description: Conveying system of the 3AC Direct Heat Class Dryer is a straight wire type trough. As the



Floor space: 5 x 5'

material is moved along, drying or cooling air is blown evenly up through it. Dryer is made up of standard length sections, each individually powered. Complete installation, thus, is tailored to fit job needs. Material speeds, air temperatures, and air volumes can be varied in each section. A final cooling zone may be used where needed.

Compact unit (5 x 5' floor space) shown in photograph is designed for low capacity continuous drying (or cooling)

(Continued on page 104)

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

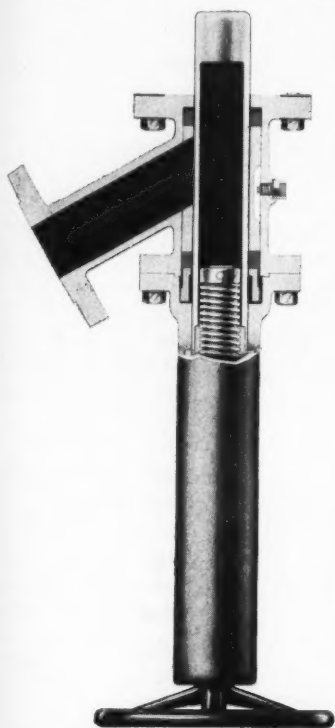
No rodding necessary in non-clogging drain valve . . .

in open position, full and unobstructed flow is assured

Uses: Draining tanks, sumps, etc.

Features: No necessity for rodding, and as there is no conventional gland, stuffingbox problems are eliminated.

Description: In the open position, a full and unobstructed flow through the Strahman Ram Type Drain Valve is assured as the ram is drawn down into the bonnet — leaving a completely open passage. In the closed posi-



Ram pushes material out of the way to keep outlet open

tion, the piston is forced up into the vessel and thus pushes aside matter that might clog the outlet.

Piston moves through two resilient rings on which tension is maintained by compression nuts. When these rings are worn beyond the compression point, they may be replaced without removing the valve from service.

(Specifications obtainable from Strahman Valves, Inc., Dept. CP, 16 Hudson St., New York 13, N. Y. . . . or for more information check CP 9232 on handy form, pages 2 and 3.)

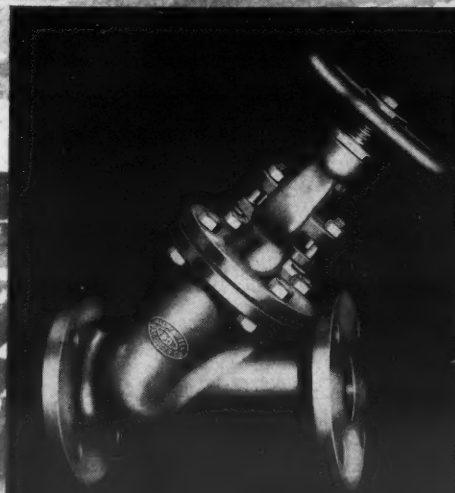
For more information on product advertised at right, specify CP 9233 . . . see information request blank between pages 2-3.



Lasts longer in corrosive service

This bolted bonnet type Y valve, made to special order in a wide range of alloys, is especially engineered for severe corrosive service. Like all ALOYCO valves, its dependable performance results from: metallurgical research devoted exclusively to corrosive applications . . . foundry and machine shop facilities set up for high alloy valves only . . . casting and machining practices dictated by the difficult characteristics of the alloys required for corrosive services.

ALOYCO No. 361
Y Valve for
150 pounds service
furnished in a
wide range of alloys.



SUCCESS STORIES FROM ALOYCO'S CORROSION CLINIC

THE CORROSIVE: 50% caustic soda and other industrial chemicals.

THE PLACE: S. S. "Marine Chemist", transporting bulk chemicals from Freeport, Texas, to northeastern ports of United States.

THE VALVE: ALOYCO 20 No. 111 gate valves. Valves in the ballast tanks of the ship are alternately submerged in sea water while caustic soda and other chemicals pass through the valves. In some instances, chemicals are in constant motion during transportation. Temperatures of 100°F and better must be maintained to keep caustic soda from solidifying.

THE RESULTS: ALOYCO valves have been successfully combating interior corrosion and external corrosion as well in this unusual application for two years.

THE BACKGROUND: The Aloyco Corrosion Clinic works exclusively in corrosion-resistant alloys. If your problem—whether it be corrosion, contamination, discoloration, temperature extremes, or proper application—can be solved by corrosion-resistant valves, it is one for the Clinic.

ALOYCO concentrates on providing longer valve life in corrosive service. Result: More ALOYCO corrosion-resistant valves are used than any other brand.

ALOYCO is the largest manufacturer specializing in high alloy valves. For a dependable solution, put your problem up to Aloyco's Corrosion Clinic.



Marine Transport Lines' floating chemical carrier—S. S. "Marine Chemist"—in service for the Dow Chemical Company—transports bulk industrial chemicals.

ALOY STEEL PRODUCTS CO., INC.
1302 West Elizabeth Avenue, Linden, N. J.

Longer Lasting
ALOYCO VALVES
1st in Corrosive Service

Versus

KEEP it dry and chlorine offers no trouble in handling. But, add even a trace of water and you have real corrosion problems. Problems that can cause costly damage, result in time consuming shut-downs, or constitute a serious personnel hazard. Wet chlorine must be controlled—can be controlled—easily and economically—through the proper use of the versatile TYGON family of plastic compounds.

Basically, the TYGON family consists of a series of skillfully modified and compounded vinyl resins in various physical forms: calendered or press-polished sheets; extruded tubing, channel or solid cord; molded goods; and coatings. Each form is especially suited to a particular application. Each has its use restrictions. However, all exhibit unusual general chemical resistance and desirable physical properties. All display outstanding resistance to chlorine under a wide range of conditions.

As a calendered or planished sheet, TYGON is generally used as a material of construction. In this form, it is resistant to all concentrations of chlorine at temperatures as high as 165°-175° F. When subject only to chlorine fumes, service temperatures can be raised to 200° F. Prolonged exposure to mixtures of chlorine and other chemicals, particularly solvents, is not advised without approval of U. S. Stoneware engineers.

Major use of TYGON sheets is in the lining or covering of tanks, vats, drums, hoppers, bins, blowers, impellers, fume hood and fume ducts. Considerable quantities are also die-cut into gaskets, washers and diaphragms for use as positive, durable seals, or separators, in all types of process equipment.

As extruded tubing, cord, or channel, TYGON resists chlorine in all concentrations within temperatures up to 200° F. Lengthy service with mixtures of chlorine and solvents is not recommended without qualified advice.

In extruded form, TYGON's main use is as a medium of transmission. TYGON Tubing has assumed a prominent position in both the laboratory and the plant. Its glass-like clarity, mirror-smooth surfaces, full flexibility, light weight, high strength, and long life make TYGON ideal for the smallest laboratory use or the toughest plant piping job. In the larger sizes, up to 2" ID, TYGON Tub-

ing has proved its worth in such uses as conveying chlorine from electrolytic cells to collecting heads, as permanent or temporary lines between pressure cylinders and mixing tanks, as inlet and outlet ports on pumps and filters, as syphon hoses, as line desurgers, and as flexible connections. For use at constant pressures of 40-250 psi, and at elevated temperatures, braided jacket reinforcement is available and suggested.

As molded goods, TYGON has a wide scope of application and, in general, exhibits the same resistance to chlorine as the extruded form. Specific pressure and temperature limits will depend on the size and design of the piece, but usually are greater than those for the other forms.

Typical uses of molded TYGON include gaskets, grommets, washers, stoppers, closures, handles, bumpers and special fittings. Where desired, molded TYGON can be reinforced with glass fibers for added strength.

As a coating, TYGON takes the forms of a solvent type paint and a plastisol (TYGOFLEX). Both forms are resistant to the fumes and spillage of chlorine and its solutions in any concentration and at temperatures up to 200° F. for the paint and 250° F. for the plastisol. Naturally, care in application is important and special consideration should be given to the limits of a thin film.

When used as a paint, TYGON affords excellent protection to all types of equipment, to structural steel, to walls, and to ceilings. For mild environments, a primer and no less than two finish coats should be used. For severe exposures, a minimum of five coats over the primer is advised.

For a heavier duty coating, TYGOFLEX can be applied by spraying on hot metal and, then, fusing with heat. TYGOFLEX is also used to cast or "slush" mold flexible parts and fittings and to cover intricate shapes by dipping.

In any of its forms, TYGON provides low cost protection and a high degree of safety in the handling of chlorine and many other chemicals including acids, alkalis, oils, and greases. The different forms available and the range of mechanical, physical, and chemical properties they exhibit, permit the proper use of TYGON in many applications and under a wide variety of conditions.

In addition to TYGON in its various forms, we also manufacture a number of other materials capable of handling chlorine in any concentration and under all types of operating conditions. These products include chemical stoneware and porcelain, acid proof brick and cements, and other organic linings and coatings.

Why don't you submit your corrosion problem, today? There's no obligation and we'll be pleased to be of assistance. So write, now!

296c

THE UNITED STATES STONEWARE CO., Akron 9, Ohio

ENGINEERS, MANUFACTURERS, ERECTORS OF CORROSION-RESISTANT EQUIPMENT SINCE 1865

When inquiring check CP 9234 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

(Continued from page 102)

of granular material. Material leaving the hopper is conveyed over the 12 x 30" long stainless steel screen by vibration. Amplitude may be varied automatically or manually to provide desired retention time. Air enters through air filter and manually controlled louvre. Rate and distribution are thus controlled. Blown through steam coils, the air is directed upwards through the screen and material bed. Temperature is themostatically controlled. Spent air leaves through flanged duct which can be connected to an exhaust system.

Other features of the dryer include indicating instruments for air temperature, air flow, and steam pressure; heat-resistant flexible connections between enclosure and both deck and hopper; hinged access door to deck and below-deck; wash drain; and insulation, when used for drying.

(Product of Traylor Vibrator Div., Jeffrey Manufacturing Co., Dept. CP, Columbus 16, Ohio . . . or for more information check CP 9235 on handy form, pages 2 and 3.)

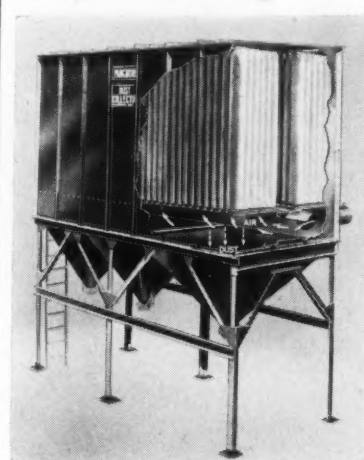
Simplified design is keynote of dust collectors . . .

walkways simplify maintenance of units; bag-shaker mechanism also serves as bag support

Uses: Collecting such dusts as carbon black, lamp black, cork, fine wood, graphite, pigments, lime, soap, fine tobacco and metal oxides.

Features: Simplified design, plus the easy accessibility provided by walkway between the bags, make it easier to inspect and maintain the collector. Shaking and bag suspension members are combined to simplify design.

Description: Cloth-bag dust collectors range from 5



Design of dust collector has been simplified

to 40' long, contain 1360 to 10,880 sq ft of filter cloth, employ from 1 to 6 hoppers, and are supplied with the appropriate structural supports for type of dust disposal desired—wheelbarrow, truck, etc.

Bags are fastened to suspension members by wing-nuts, open end down. Each bag has a rubber hem at the open nozzle to assure dust-tight fitting of bags to grid plate underneath.

The nozzles are sealed over grid openings by clamping a hand knob.

Dust-laden air enters collector just under grid floor. As its velocity drops, heavier particles fall into the hoppers. Finer material is removed by the bags as the air passes through them on its way to outlet at top of collector. When shaking bags to remove deposited dust, collector exhaust is shut down. Dust is removed through valves at bottom of hoppers.

(Pangborn Corporation, Dept. CP, Hagerstown, Md. . . . or for more information check CP 9236 on handy form, pages 2 and 3.)

CHEMICAL PROCESSING

TYGON
plastics

PROCESSING EQUIPMENT

Low-pressure dusting of rubber, plastics is clean . . .

powder spray applies deposit of controlled amount

Uses: Dusting slab, sponge and hard rubber, coated stock, sheeting, channel moldings, extrusions, etc. In addition to these applications in the rubber industry, powder sprayer has allied uses in the plastics, paper-making, and water-proofing fields.

Features: Close control of powder deposit is assured because powder does not agglomerate or coalesce while being sprayed. According to manufacturer, collectors, blowers or exhaust recovery systems are not required because low-pressure air is used in the spray.

Description: Randall Dusters come in three models, each one ready for immediate operation after connection is made to air line. Carrier air is completely dry in the spray.

(Dusters are made by Randall Duster Corporation, New York, N. Y., and are distributed through National Rubber Machinery Company, Dept. CP, Akron 8, Ohio . . . or for more information check CP 9237 on handy form, pages 2 and 3.)

Square panel fans can mount horizontally, vertically, etc. . . .

available with fan wheels 24, 30 and 36" in diameter

Uses: Suitable for ventilating operations against relatively low static pressures.

Features: Ball bearing motor construction permits mounting vertically, horizontally, or at any angle.

Description: DeBothezat Panel Vent Sets have a square panel with flanged edges and are available with fan wheels 24, 30 and 36" in diameter. All units are equipped with slow speed V-belt drives for quiet operation. Air moving capacities range from 5590 to 13,190 cfm.

Housing is welded, 14-gage steel with tubular bracing. Two motors are standard: 1/3 and 3/4 hp.

(Fan line is a product of DeBothezat Fans Division, American Machine and Metals, Inc., Dept. CP, East Moline, Ill. . . . or for more information check CP 9238 on handy form, pgs. 2 & 3.)

For more information on product at right, specify CP 9239 . . . see information request blank between pages 2-3.



REGARDLESS OF SIZE . . . they must
have *Dimensional Accuracy*

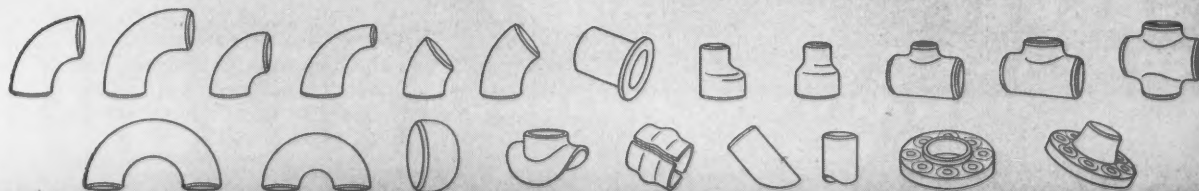
This photographic fantasy is simply to emphasize the exceptional dimensional accuracy and uniformity of Midwest Welding Fittings that saves time in welding and reduces piping costs.

MIDWEST
PIPING & SUPPLY CO., Inc.

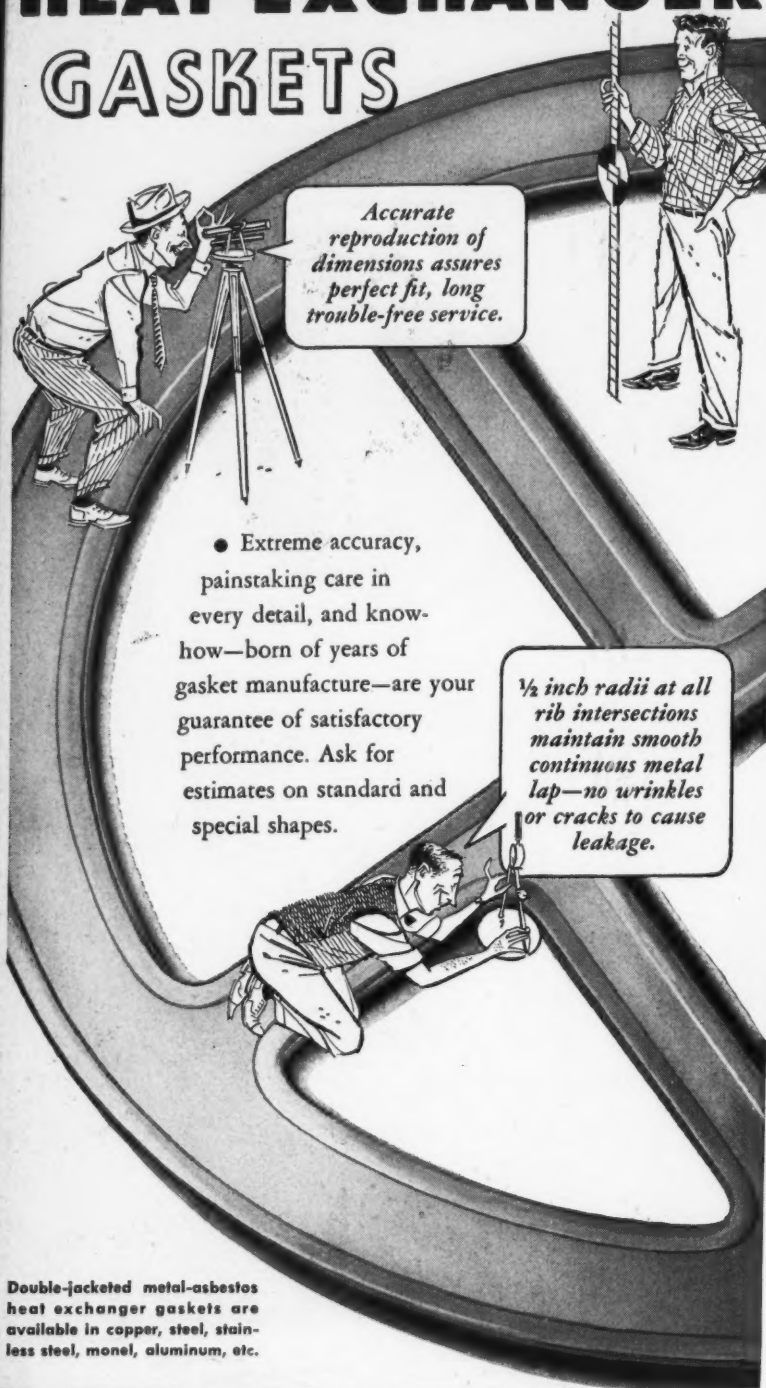
Main Office: 1450 South Second Street, St. Louis 4, Mo.
Plants: St. Louis, Passaic, Los Angeles and Boston
Sales Offices: New York 7—30 Church St. • Chicago 3—79 West Monroe St.
Los Angeles 33—520 Anderson St. • Houston 2—1213 Capitol Ave.
Tulsa 3—224 Wright Bldg. • Boston 27—426 First St.

STOCKING DISTRIBUTORS IN PRINCIPAL CITIES

MIDWEST WELDING FITTINGS IMPROVE PIPING DESIGN AND REDUCE COSTS



HEAT EXCHANGER GASKETS



Accurate reproduction of dimensions assures perfect fit, long trouble-free service.

● Extreme accuracy, painstaking care in every detail, and know-how—born of years of gasket manufacture—are your guarantee of satisfactory performance. Ask for estimates on standard and special shapes.

1/2 inch radii at all rib intersections maintain smooth continuous metal lap—no wrinkles or cracks to cause leakage.

Double-jacketed metal-asbestos heat exchanger gaskets are available in copper, steel, stainless steel, monel, aluminum, etc.

UNITED STATES GASKET COMPANY

618 N. 10TH STREET, CAMDEN, N.J.

LEADING FABRICATORS OF "TEFLON" FOR THE CHEMICAL, PROCESS AND ELECTRONIC INDUSTRIES



When inquiring check CP 9240 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Vertical pump recycles slurry in wet blast machine . . .

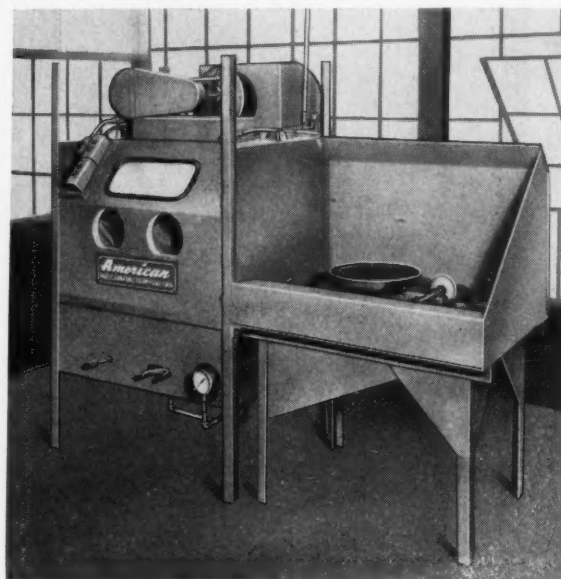
design eliminates suction piping, fittings and valves

Uses: Cleaning and smoothing of bottle molds, rubber molds, plastic molds, dies, plastic surfaces, etc. Machine is intended to perform work for which dry blasting is too severe; namely, work with thin edges and sharp corners or work needing precision cleaning. Typical application is finishing of plastic display forms for ladies' hosiery.

Features: Use of vertical pump for slurry recirculation eliminates all suction piping, valves and fittings. Pump is always primed by flooded type suction, and the operation of valves for starting or stopping is unnecessary. Since pump does not need packing glands, loss of slurry through leakage is eliminated. Abrasive can't plug pump impeller when machine is shut down. Hopper of machine does not have to be drained before removing pump.

When abrasive needs changing, operator doesn't have to bail out slurry or handle it in any way. An air ejector is available for blowing slurry through hose.

Description: Machine has low height, but bottom is high enough off the floor not to interfere with good house-keeping. Average-size operator will not need a platform while blasting in the machine. Armholes are equipped



Wet blasting machine

with gauntlets so that every workman can use his own gloves and small work can be passed through the armholes without opening doors. Gauntlet drainage has been designed to prevent slurry from dripping down cabinet.

Rubber hose has been used instead of metal pipe wherever possible, to simplify maintenance and eliminate noise from water hammer. Reset timer keeps record of number of hours an abrasive has been used. Large window permits clear view of work. Use of cool fluorescent lights inside the cabinet avoid "baking" of abrasive on the glass.

Manufacturer can supply from stock all abrasives and chemicals needed in the equipment. Abrasive sizes stocked range from 80 to 2500 mesh.

(The Liquamatte is a development of American Wheelabrator & Equipment Corp., Dept. CP, Mishawaka, Ind. . . . or for more information check CP 9241 on handy form, pages 2 and 3.)

SLY

PIONEERS AND
LEADERS IN
DUST CONTROL



Sly Dust Filter at the Walker China Co., Bedford, Ohio, prominent in the production of vitrified china for 25 years.

Two points of dust origin. Note hoods into which all dust-laden air is drawn, thence piped to Sly Dust Filter.

YOU, TOO, CAN BENEFIT BY SLY'S KNOW-HOW

Over 100 different kinds of dusts are being collected with Sly Dust Filters. Thousands of installations are in operation—they collect *all* the dust.

Sly Dust Filters are used on such difficult dust as powdered sugar, bentonite clay, paint and pigments, aspirin and other pharmaceuticals, chemicals of all kinds, talc, lime, detergents.

Designed and engineered so that they save on space and power, Sly Dust Filters require less attention, less maintenance, yet—they are not expensive.

We offer you the benefit of 50 years' experience in solving all kinds of dust problems. Let us solve yours. A Sly engineer is near you. Ask for Bulletin 98.



THE W. W. SLY MANUFACTURING CO.
4754 Train Avenue • Cleveland 2, Ohio

New York • Chicago • Philadelphia • Syracuse • Detroit • Buffalo • Cincinnati • St. Louis • Indianapolis • Birmingham • Los Angeles • Toronto

When inquiring check CP 9242 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

**Increases life of taps,
drills, cutting tools
up to 12 times . . .**

lubricant said to be free from
all abrasives and acids

Uses: Cooling and lubricating agent
for various machining operations.

Features: Stated to triple production
rate, and, at the same time, increase the
life of taps, drills and cutting tools up
to 12 times.

Free from all abrasives and acids.

Description: Available in both
paste and semi-paste form, "Lubri-Cut"
is equally efficient when used on hard
and soft ferrous and non-ferrous met-
als, on plastics or on glass.

This fire-resistant compound is stated
to be composed of special cooling and
lubricating agents which permit the
results cited in high speed drilling,
blind hole tapping, tapping, counter
sinking, etc.

("Lubri-Cut" is manufactured by Tap
& Drill E-Z Corp., Dept. CP, 11033
Hawthorne Blvd., Inglewood, Calif.
. . . or for more information check CP
9243 on handy form, pages 2 and 3.)

**Undercoats even damp
rusted panels —
satisfactorily . . .**

dries hard and can be overcoated
in a matter of minutes

Uses: Metal primer.

Features: Can be applied to old,
oxidized paint films (bituminous coat-
ings excepted) without lifting or
bleeding and can be safely overcoated
with vinyl, nitrocellulose, alkyd and
oil based finishes.

Description: Tygorust was specifi-
cally developed for use on rusted
steel surfaces without the necessity of
previous preparation. Under exag-
gerated test conditions, Tygorust has
been brushed and sprayed on damp,
rusted panels, and also brushed on
dripping-wet rusted panels, with com-
pletely satisfactory results.

For optimum results, however, surface
must be free of grease, oil, and loose
scale. This metal primer dries hard
and can be overcoated within a
matter of minutes.

(Manufactured by The U.S. Stone-
ware Co., Dept. CP, Akron 9, Ohio
. . . or for more information check
CP 9244 on handy form, pgs. 2 & 3.)

For more information on prod-
uct advertised at right, specify
CP 9245 . . . see information re-
quest blank between pages 2-3.



13 YEAR TORTURE TEST ...STILL LIKE NEW!



QUAKER PACKINGS

Provide Positive Seal . . . Retain Flexibility Despite High Temperatures and Pressures

Here's a seat gasket cut from Ebonite Sheet Packing that rolled up thirteen years of trouble-free service on a pop-off pressure relief valve in a southern plant . . . withstanding high temperatures and pressures . . . eliminating leaks and shutdown time, assuring absolute safety. Only extensive changes requiring different sized gaskets made it necessary to replace this gasket at all!

Performance like this is made possible because of Ebonite's remarkable leak-proof characteristics and the fact that it will not

carbonize, melt or become hard. That's why Ebonite is ideal for high pressure joints and flanges; for use with superheated steam, ammonia, brine, air, oils, acids, caustics, gases, hot or cold water.

For all your requirements—whether packings or belting for conveying materials . . . flat or V-belts for driving steam engines, steam turbines or electric motors . . . hose for flushing, suction, cleaning or fire fighting purposes—see your Quaker distributor, or write direct to us.

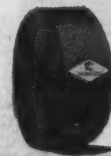
HOSE FOR RUGGED WEAR

Hose for air, steam, water, oil, gas or paints, Quaker makes it to fit the needs of the Chemical Industry. Each is pre-tested for peak performance.



BELTING FOR MAXIMUM HORSEPOWER

Flat belts or V-belts, Quaker has the one to fit the drive . . . to transmit maximum horsepower at the lowest operating cost . . . all pre-tested to assure peak performance.



QUAKER RUBBER CORPORATION

DIVISION OF H. K. PORTER COMPANY, INC.

PHILADELPHIA 24, PENNA. BRANCHES IN PRINCIPAL CITIES





SIZING and designing of process equipment specified on your flow sheet is another phase of Wigton-Abbott's 5-point service to the chemical industry. This is conducted as part of an over-all plant construction project or as an individual job. Whether the flow sheet is prepared by your own personnel or developed by our research and engineering, Wigton-Abbott is prepared to carry through to completion of the plant. Let us discuss your development and construction problems with you . . . we can help you every step of the way.



● *Yours for the asking*
"Packaged Plant Construction"
Reading time, only 10 minutes—
but it will save you many hours
by answering basic questions.

5 WIGTON-ABBOTT SERVICES TO THE CHEMICAL INDUSTRY



PROCESSING EQUIPMENT

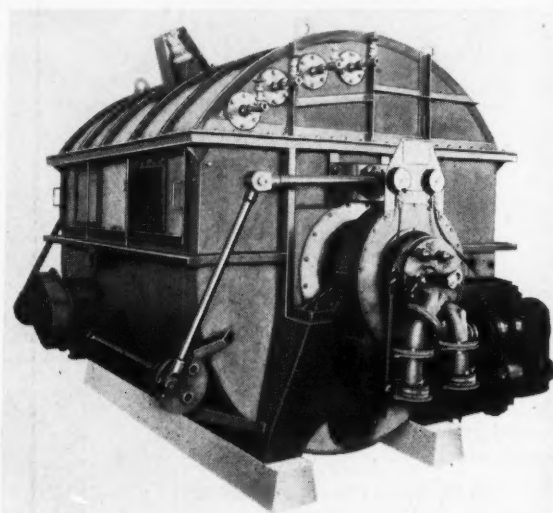
Vapor-tight hood built around continuous vacuum filter . . .

adapts this type of unit for application with toxic or flammable materials, special atmospheres

Uses: In filtering toxic or flammable products, or those which must be handled in an inert or special atmosphere.

Features: Vapor-tight design permits continuous filtration of many products which formerly had to be handled in more expensive batch pressure filters.

Description: Photograph shows continuous vacuum filter with vapor-tight hood for handling an exceedingly toxic product. Space inside hood is kept slightly below



Continuous vacuum filter with vapor-tight hood

atmospheric pressure for the prevention of the escape of gases or fumes.

Filters are available with wide range of filter areas, and in chemical resistant as well as standard construction. Similar design has been adapted to manufacturer's continuous precoat filter.

(Manufacturer is Oliver United Filters Inc., Dept. CP, 31 W. 42nd St., New York, N. Y. . . . or for more information check CP 9247 on handy form, pages 2 and 3.)

Construction details of fan-cooled, totally-enclosed motors

Six-page bulletin gives construction features of manufacturer's totally-enclosed, fan-cooled motors in ratings from 40 hp at 600 rpm through 800 hp at 3600 rpm. Simple tube-type, air-to-air heat exchange system distinguishes the line: internal fans circulate air in closed circuit within motor, convey heat to nest of tubes around stator; then external fan blows outside air through tubes to exhaust heat.

Publication points out that the motors are available in standard and explosion-proof designs. Former are for applications without explosion hazards but requiring protection of the windings from dust, dirt, acid fumes, etc. Bul 51B7149B is issued by Allis-Chalmers Mfg. Co., Dept. CP, 1151 S. 70th St., Milwaukee 1, Wis. When inquiring specify CP 9248 on handy form, pages 2 and 3.

Wigton-Abbott Corporation

DESIGNERS...ENGINEERS...CONTRACTORS...PLAINFIELD, NEW JERSEY

When inquiring check CP 9246 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Announces larger electric box furnace . . .

elements of 15 x 12 x 30" model embedded in ceramic slabs

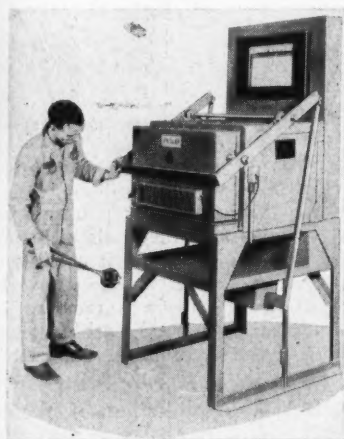
Uses: Electric box furnace is for operating temperatures to 2000°F.

Features: Chamber size of 15 by 12 by 30 inches is larger than in manufacturer's three previous models of this type.

Heating elements are embedded in ceramic slabs to protect them from corrosive attack. These slabs, in sides, bottom, top, rear, and door of furnace, are quickly removable through door opening.

Door opening provides adequate work room since, (as shown) the door is nearly the entire front wall.

Description: All standard sizes of this type furnace use the "movable wall" type door. Instead of the usual

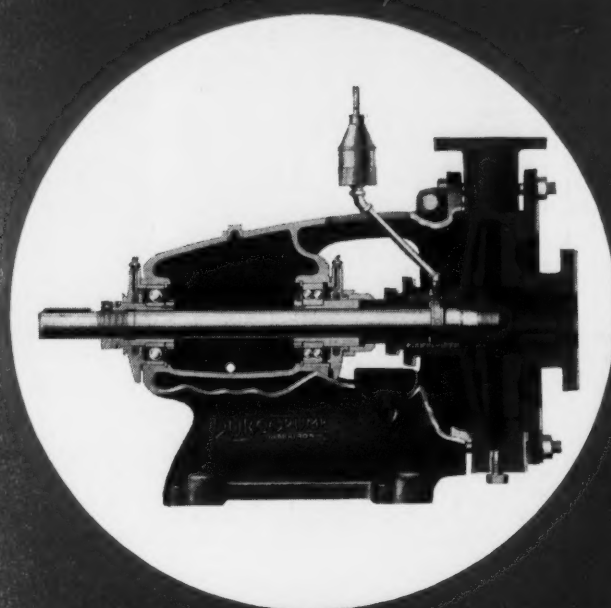


"Movable wall" type door of electric box furnace is easily raised through use of counterweighted door operator

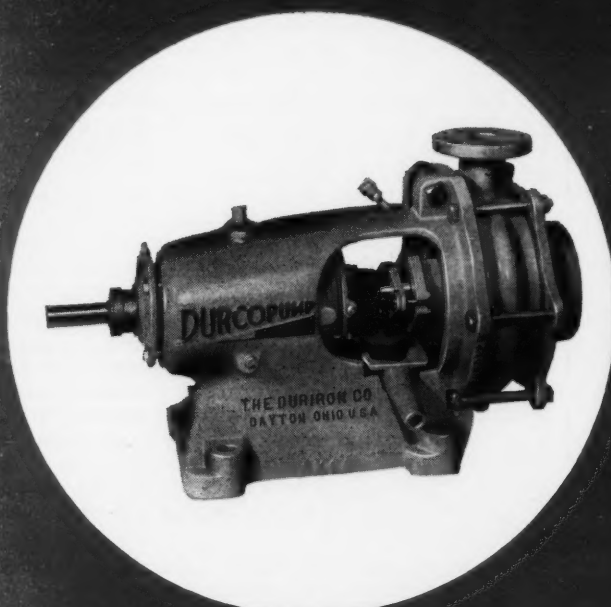
vestibule of heavy fire brick and a relatively small door closure, this door is virtually the entire front wall of the furnace. It is moved vertically in response to simple, counter-balanced, door-operating mechanism.

(Further information on the Cooley Type B-L electric box furnace may be obtained from Cooley Electric Manufacturing Corporation, Dept. CP, 915 Daly St., Attention B-8, Indianapolis 2, Ind. . . . or for more information check CP 9249 on handy form, pages 2 and 3.)

For more information on product at right, specify CP 9250 . . . see information request blank between pages 2-3. ➤



THE SERIES R



FOR OWNERS OF SERIES M DURCOPUMPS:

Many parts of the Series R Durcopumps are interchangeable with the Series M. It is possible for owners of these older pumps to convert to the Series R, thus taking advantage of design improvements. Write for Bulletin P/2 on Conversion.

For acid handling: **THE NEW DURCOPUMPS PROVED IN ACTUAL SERVICE**

DURCOPUMPS—

In actual service for more than a year, the Series R Durcopumps incorporate the best features of the earlier Series M Pumps with design changes which have improved performance and reduced maintenance.

Wet ends, of course, are interchangeable for meeting changing conditions. Among other improvements are a better stuffing box design, through-bored frame for positive alignment, and a more rugged impeller and heavier shaft for better balance and longer life. All features of the Series R Durcopumps are discussed in Bulletin P/1.



THE DURIRON COMPANY, INC.
Dayton, Ohio

Dekoron[®]
PLASTIC ARMORED METAL

**cuts instrument
tubing costs**

2 ways...

FIRST—Dekoron tubing costs less than expensive alloy instrument tubing ... conserves hard-to-get critical materials, too.

SECOND—Dekoron outlasts every other type tubing which Samuel Moore & Company has studied...has outlasted every kind of tubing which customers have reported trying.



Dekoron tubing still in good condition after 2½ years' exposure to deposits high in hydrochloric acid. Copper was destroyed in 18 months.

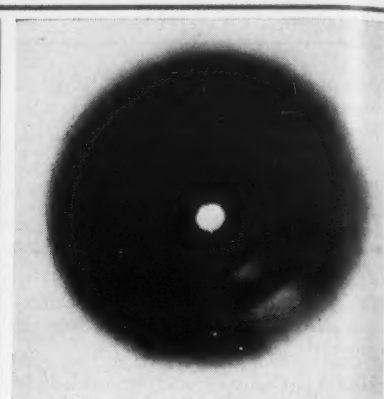
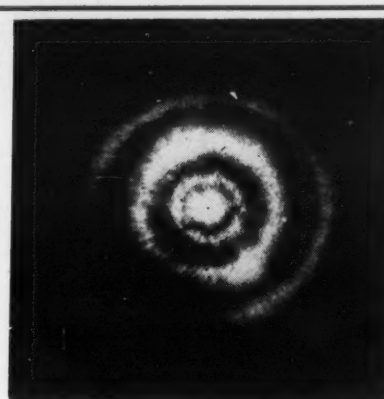
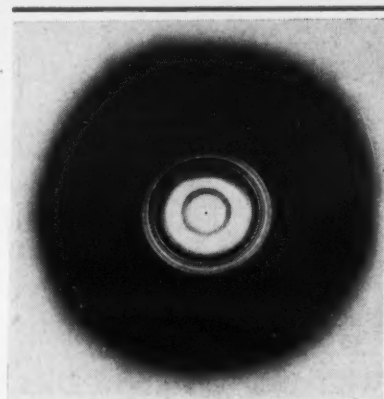
Dekoron tubing is not metal only, not plastic only—it combines the advantages of both materials. Dekoron has a thick, corrosion-resistant coating of polyethylene or vinyl plastic tightly extruded over steel tubing. Or for special installations, copper or aluminum can be used.

Lengths of Dekoron tubing are joined with standard fittings covered with plastic tape to make the complete installation impervious to corrosive fumes from acids and alkalis, moisture, salt air, oils and grease. No expensive painting or other maintenance is required.

If you have a corrosion problem, write for data sheet "Dekoron—a better kind of corrosion-resistant instrument tubing." Tells how Samuel Moore & Company coats customers' tubing and lowers costs. A-4946

Dekoron tubing

SAMUEL MOORE & COMPANY
Dekoron Tubing Division
MANTUA, OHIO



Catalyst Depletion Studies Made With Electron Diffraction

**Method is sensitive to changes in surface
conditions — can predict exhaustion long
before other methods**

Three photographs made with electron diffraction unit show the progressive exhaustion of a catalyst. Unused material gives a sharp pattern. After some use a different, more blurred pattern is obtained. Pattern is virtually non-existent in exhausted catalyst

*For the
Laboratory*

CHECKING catalyst depletion is a difficult problem. In many cases the exact mechanism of catalyst failure is only slightly known. Since catalysis is generally acknowledged to be a surface phenomenon, surface condition of the catalyst should be an almost universal clue to the efficiency or remaining life of a partly exhausted catalyst. Electron diffraction has emerged as a practical method of checking this, because the method indicates surface conditions and crystalline structure.

Electron diffraction as a means of indicating structure, surface conditions, etc., depends on forming a narrow beam of electrons traveling in parallel paths. This beam passes through a sample (or impinges on it) and is scattered to some extent. Just as light passing through a diffraction grating is split into divergent beams, the electron beam is split into divergent zones of a ring pattern. Placement of these rings can indicate composition, crystal lattice, foreign inclusions and other aspects of the material tested.

In the set of three illustrations, diffraction patterns are shown for a catalyst which slowly becomes covered with an amorphous film as it is used. Unused catalyst of this type shows sharp, clear rings. After being subjected to use, the catalyst produces a pattern where the rings are smeared out and located differently. Finally, the depleted catalyst has no clear pattern (though two faint rings are perceptible in the original photographs).

Obviously this method could be used to determine when catalyst should be renewed. Small samples can be used, and it is not necessary to make photographic records. Electron diffraction can also be seen to be a valuable tool for studies in catalyst mechanism and efficiency under various conditions.

Electron diffraction instruments are available as compact

units. They provide for fluoroscopic or photographic examination of a wide variety of materials either by reflection or transmission techniques. Unit consists of vacuum system, electron gun, power supply and complete camera assembly. Power supply is regulated to 0.01% and produces a continuously adjustable voltage between 25 and 50 kv. Minimum beam diameter is 0.002" or less.

An interesting paper, "Practical Applications of Electron Diffraction," covers this and other phases of the use of method. It was presented at the Houston Instrument Show last September and is available to non-members. Remit 50c direct to Instrument Society of America, Dept. CP, 921 Ridge Avenue, Pittsburgh 12, Pennsylvania.

(Manufacturer of this equipment is General Electric Company, Dept. CP, Schenectady 5, N. Y. ... or for more information check CP 9252 on handy form, pages 2 and 3.)

**Only one control is used
in operating meter
for radiation ...**

indicates gamma and X-ray level continuously — range covers milliroentgens to roentgens

Uses: Indicates gamma and X-ray level continuously in two ranges: 0 to 100 milliroentgens per hour and 0 to 50 roentgens per hour.

Features: Simplest possible operation.

Description: Argonne Dosage-Rate Survey Meter is a quartz fiber electroscope. Battery powered, it uses so little current that it is built to operate continuously and

CHEMICAL PROCESSING

hence has no on-off switch. Even so, the drain is so slight that battery life in the instrument is effectively the shelf life of the battery.

Heart of the meter is a small (5/16" long), J-shaped quartz fiber. Shadow of the fiber can be seen through a window in the meter. Position of the shadow on scale



User looks through window in the meter to see where quartz fiber shadow falls on scale

gives a direct reading. Room illumination or daylight is used to form the shadow. For use in darkness, a clip-on light can be attached.

Measurements in the range of 0 to 100 milliroentgens per hour are required in normal health-hazard checking in the laboratory or process where radioactive materials are handled. The higher range of 0 to 50 roentgens per hour, on the other hand, would prove useful in event of catastrophe survey work where large quantities of radioactive material were released. In order to change from one range to the other, the meter is simply inverted. This is the single control. In turning to the higher range, a one billion ohm resistor mounted on a hinge is dropped into the circuit. Another aspect of the instrument which suits it to its on-the-spot role: its size (2 x 4 x 6" high) and weight (8 oz) permit it to be carried in a coat pocket.

(Instrument is *not* commercially available, but further information can be obtained from Argonne National Laboratory, Dept. CP, P. O. Box 5207, Chicago 80, Ill. . . . or for more information check CP 9253 on handy form, pages 2 and 3.)

Wealth of tabular material on 12 plasticizers

Ring-bound, attractively-printed 76-page catalog is a survey of 12 of manufacturer's plasticizers. First sections discuss the utility of the individual plasticizers with data showing their performance. Major emphasis is placed on the use of plasticizers with vinyl chloride resins. Next come tables and charts comparing the properties of all 12 products. Separate chapters are devoted to performance in vinyl organosol and plastisol dispersions, nitrocellulose coatings, synthetic rubbers, and emulsions.

A special section describes in detail all test methods used in evaluating the performance characteristics. Cat F-5882A is issued by Carbide and Carbon Chemicals Co., Division of Union Carbide and Carbon Corp., Dept. CP, 30 East 42nd St., New York 17, N. Y. When inquiring specify CP 9254 on handy form, pages 2 and 3.

FEBRUARY, 1952

BECKMAN Model IR-2 Infrared Spectrophotometer



Order it
from
HARSHAW

The Model IR-2 Infrared Spectrophotometer is unsurpassed for accuracy, convenience, and overall usefulness in research investigations, analytical laboratory determinations and for the continuous automatic control of plant streams.

Many design features contribute to the convenience and speed of operation of the IR-2: Elimination of zero drift, and non-linearity through the use of chopped radiation and an a-c amplifier; minimized stray energy by advanced optical design and employment of a filter-beam chopper; construction in separate compartments, making the IR-2 the most adaptable instrument available; Incorporation of a turret-stop mechanism for quick, accurate setting to predetermined wave lengths; collimation of the radiation beam so that the focus is unaffected by substituting special cells of various lengths; direct calibration of the monochromator in wavelength units to eliminate conversion charts; dual gas cells independently filled and positioned without removal from their compartment.

The Beckman Model IR-2 excels in performance: precise reproducibility of transmission measurements; high resolution of better than 3 cm⁻¹ at 10 microns; reduction of stray light to less than 1 per cent at 14 microns and to less than 2 per cent at 15 microns; excellent reproducibility of slit and wavelength settings; constant energy output of the source;

linear detecting and amplifying system not subject to uncontrolled fluctuation in sensitivity.

The instrument's fundamental design is similar to that which has proven so successful in the well-known Beckman Model DU Quartz Spectrophotometer. The model IR-2 is constructed of separate units which are easily assembled and disassembled. A rugged, sealed monochromator mounted in a steel housing is the principal unit. To this are attached three other units in the standard instrument; the light-source compartment, the gas-cell and energy receiver compartment, and the liquid-cell compartment. Because other units such as special radiation sources or receivers, or different cells and cell compartments can be attached as desired, the instrument is readily adaptable to specialized measurements and to the changing requirements of research and plant control.

MODEL IR-2S SPECTROPHOTOMETER. Comprised of three units; the instrument assembly with sodium chloride optics, the electronic amplifier, and the power supply for use on 115-volts, 60-cycles. The instrument is assembled with monochromator and three integrally attached units: the energy receiver compartment with thermocouple, the liquid cell compartment, and the light source compartment with phototube regulator, beam chopper and auxiliary metal fixed gas cell, approx. 27-cm. Other cells listed separately. Direct reading wavelength scale 1.0 to 15.0 microns. Shipping weight 400 lbs. . . . **\$4650.00**

Contact Harshaw for all Beckman Instruments

See this instrument demonstrated in Booths 18-19, March 5-6-7, 1952 at the Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy. Wm. Penn Hotel, Pittsburgh, Pa.

HARSHAW SCIENTIFIC
DIVISION OF THE HARSHAW CHEMICAL CO.
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When inquiring check CP 9255 on handy form, pgs. 2-3

"Good bye contraptions"



"Good buy VARIDRIVES"



U.S. VARIDRIVE MOTOR

The miracle motor with thousands of speeds. Occupies little more space than ordinary motor. Big dividend earner. Increases production. 1/4 to 50 h.p. 2 to 10,000 rpm.



U. S. Electrical Motors, Inc. CP-2
300 E. Slauson Ave., Los Angeles 54, Calif.
or Milford, Conn.

Send your Varidrive Motor Bulletin ☐
Other Bulletins: Unclosed Motors ☐
Synchrogear Motors ☐

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Company _____
Address _____
City _____ Zone _____ State _____

When inquiring check CP 9256
on handy form, pgs. 2-3

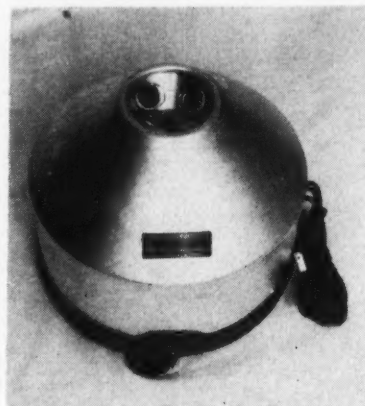
FOR THE LABORATORY

**Spins four 15-ml tubes
at 1550 rpm — takes
little bench space . . .**

centrifuge operates from 115v line, is adequately safe
Uses: Laboratory centrifuge.

Features: Small bench space required — unit is only 9 3/4" diam, stands 8 1/2" high.

Description: Angle Head Centrifuge takes four standard 15-ml tubes with aluminum safety shields. Balanced rotor is secured to shaft by means of a pin and setscrew. Aluminum shield extends over all moving parts, protecting operator and mechanism, too. This shield is anchored to a cast iron base by three screws. Unit rests on large rubber suction feet.



Diameter of unit is 9 3/4"

On-off switch is located in base near the motor it controls. Operating at 1550 rpm, this motor draws 1.5 amp from standard 115v, 60 cps AC line. It is well ventilated and can be operated continuously without overheating. Shipping weight of the unit is 18 lb.

(Product of The Scientific Glass Apparatus Co., Inc., Dept. CP, Bloomfield, N. J. . . . or for more information check CP 9257 on handy form, pages 2 and 3.)

Announces two aids for the photo lab . . .

print flattening solution controls humidity, hypo neutralizer assures permanent prints

A print flattening solution (BFI No. 20) and a hypo neutralizer (BFI No. 30) are new products that should be welcomed by those concerned with photography.

BFI No. 20 achieves a controlled balance between the moisture content of the emulsion and base. The solution contains humectants that are not detrimental to drying belts and are not tacky. Resistant to mold and bacterial deterioration, the solution is said to provide an excellent base for retouching and tinting. Tests have revealed the following desirable performance factors: 1) retains and maintains moisture inherent in the print, 2) penetrates the paper support of the print and lubricates fibres, 3) prevents whites yellowing and blacks from becoming brown, 4) imparts high gloss to glossy papers, and 5) facilitates drying.

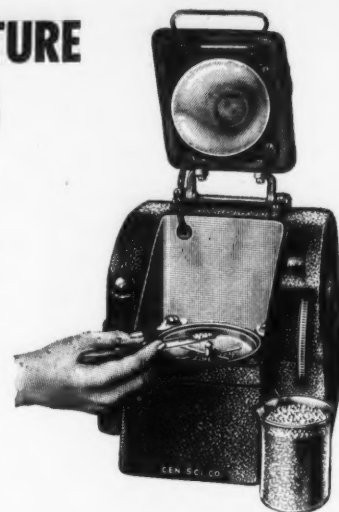
BFI No. 30 is reported to assure more permanent prints through its chemical neutralization of residual hypo. It prevents discoloration, fading, and staining of prints. Finer grain structure is possible due to reduced washing time. Open tray life is long because there are no volatiles. Since it completely neutralizes residual hypo, hydrogen sulfide gas will not readily attack prints. Use of BFI No. 30 requires no after treatment to correct the degradation of the print's tones; it does not cause sticking to drum dryers.

(Products of Brown-Forman Industries, Division of Brown-Forman Distillers Corporation, Dept. CP, 1908 Howard St., PO Box 1080, Louisville 1, Ky. . . . or for more information check CP 9258 on handy form, pages 2 and 3.)

MEASURES MOISTURE BY WEIGHING

New instrument determines moisture
faster and more accurately

. . . drying by infrared radiation and weighing with a sensitive torsion balance indicates moisture in flour, oats, dry milk, sugar, rice, hay, tobacco, detergents, foundry sands and other products with speed, accuracy and reproducibility. Readings are direct in percentage of moisture content. Scale is graduated 0 to 100% in .2% divisions.



Write for Circular 1210

CENTRAL SCIENTIFIC COMPANY

Scientific Instruments • Laboratory Supplies
1700 Irving Park Road • Chicago 13, Illinois

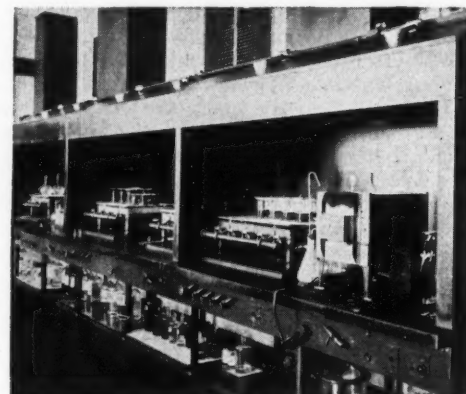


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When inquiring check CP 9259 on handy form, pgs. 2-3

make Perchloric Acid handling safer!



International Nickel Company, Inc.,
Research Laboratory, Bayonne, New Jersey

Precautions that must be taken in handling perchloric acid make special hoods a necessity. Now Alberene Stone offers you fume hoods specially designed to reduce hazards in working with perchloric acid . . . specially designed to give you greater safety. For prompt advice on any of your fume problems write Alberene Stone Corporation of Virginia, 419 4th Ave., N. Y. 16, N. Y., or visit our nearest branch office.

FREE REPRINTS
of an article
giving helpful hints
on safe handling
of perchloric acid
are yours for the
asking. Just write
today on your
company letterhead.



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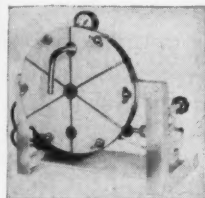
When inquiring check CP 9260 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Ertel Filters

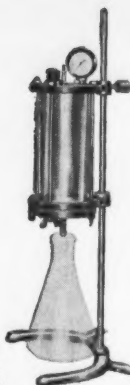
FOR LABORATORY AND SMALL LOT PRODUCTION

Model 10 in either stainless steel, hard rubber, or brass, nickel or silver plated, to meet all laboratory filtration requirements, provides the versatility that ranks it "tops" in modern laboratories. Model E-1 is recommended for lab or batch filtration of 5 to 10 gallons. Model EBW is the smaller production unit that has solved hundreds of operations for extremely low initial investment.

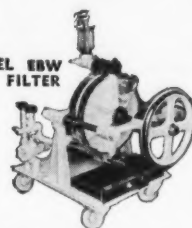


MODEL E-1
SINGLE DISK

MODEL No. 10
CYLINDER
TYPE



MODEL EBW
FILTER



Experience has proven that the great majority of filtration problems can be solved by our engineers with their seasoned background of filtration experience. What's your problem?

ERTEL ENGINEERING CORPORATION

KINGSTON 3, NEW YORK
Branch Office & Showroom Located in New York City
COMPLETE LINE OF
Liquid Handling Equipment

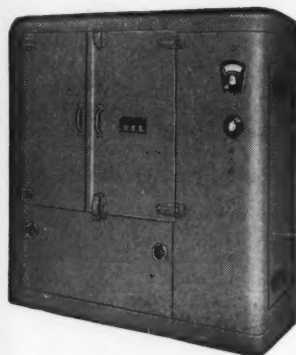


When inquiring check CP 9261 on handy form, pgs. 2-3

accuracy

at High Operating Speed with

Despatch LABORATORY OVENS



Despatch Laboratory and Production Ovens are ideally suited to all types of research . . . testing . . . production control. They are designed to provide the closest heat uniformity through every inch of the work chamber . . . consistently accurate temperature control at all heats . . . ample speed to process capacity loads at any desired operating temperature.

Chemical and analytical, drying and baking, preheating and aging, sterilizing and curing, food dehydrating — these are just a few of the uses. Available in six models, with inside dimensions ranging from 13"x13" to 37"x25"x50".

- Positive Air Intake
- Guaranteed Heat Elements 2700 to 12,000 watts
- High Volume Fan
- Air Velocity Control
- Accurate Indicating Control
- Modern Design — Rounded Corners

DESPATCH

Established OVEN CO. in 1902

Manufacturers of Ovens
For All Purposes

ASK FOR BULLETIN No. 106

343 DESPATCH BLDG., MINNEAPOLIS 14, MINN.

When inquiring check CP 9262 on handy form, pgs. 2-3

FEBRUARY, 1952

FOR THE LABORATORY

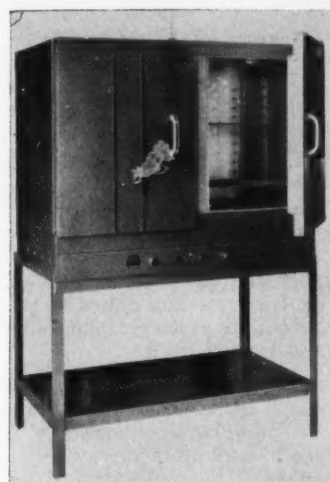
Sterilizes material without steam . . .

electric oven built in four sizes with automatic control

Uses: For sterilizing lab equipment and materials without steam. Dry air is used.

Features: Four sizes are available from 1.2 to 12 cu ft. Temperature can be controlled. Timer is optional equipment.

Description: Ovens are built with double wall construction. Outer wall is enameled steel; inner, stainless.



Stainless shelving is adjustable. Convection or forced circulation can be supplied.

Temperature range of the ovens is 35 to 180°C. Non-arcing mercury relay is used to prevent pitting contacts. Wattage of smallest unit is 700 w; largest uses 1900 w, 110 v AC/DC.

(Product of Blue M Electric Co., Dept. CP, 306-308 W. 69th St., Chicago 21, Ill. . . or for more information check CP 9263 on handy form, pages 2 and 3.)

Gives news on lab items

A periodical published six times a year, this latest edition of a catalog on laboratory items contains 20 pages. It departs from the catalog format in its feature article which tells of the Corning Glass Center.

Items described and illustrated include: automatic pipetting machine, viscometers, refractometer, air draw furnace, and water demineralizer. "Announcer, 52-1-45" is issued by Burrell Corp., Dept. CP, 2223 Fifth Ave., Pittsburgh 19, Pa. When inquiring specify CP 9264 on handy form, pages 2 and 3.

NOW added versatility for the Beckman Model B Spectrophotometer . . .



A NEW REFLECTANCE ACCESSORY that simplifies color evaluation

Easily Installed

The attachment consists of an integrating sphere in holder and a sliding sample tray which are easily installed in place of the standard Model B sample compartment and cell carriage.

Precise Measurements

To permit utmost measurement precision, a detent mechanism operated by a convenient push button in the sample tray knob exactly reproduces forward and backward position of the sliding sample tray. The resulting precision is particularly valuable for accurate measurements on samples with rough surfaces or non-homogenous colors.

Readings taken rapidly are reproducible to at least 1%—with careful technique even greater precision is obtained.

Operating Convenience

Special provision has been made so that liquid samples can be conveniently inserted without spilling . . . powdered samples without disturbing the smoothed surface.

Sample Size

Sample size is approximately 1" x 1 1/4" with a maximum thickness of 5/16"—ample for most applications. Or, by simply rotating the sphere 180° in its holder, larger samples can easily be accommodated.

Quick, Easy Readings

Accurate color measurements are made with great speed and simplicity. First the instrument is adjusted to read 100% reflectance on a white standard (such as MgO), the sample is moved into position and the percent reflectance (compared to the standard) is then read directly from the meter. It's as simple as that—and the three-compartment sample tray permits quick comparison of two samples and a standard on each run.

SEND FOR NEW BULLETIN

Important features of this new Reflectance Accessory are outlined in this bulletin. A bulletin describing the unit in greater detail will gladly be sent. Ask your nearest Beckman Instrument Dealer for Bulletin 2231—or write direct.

BECKMAN
INSTRUMENTS
INC.

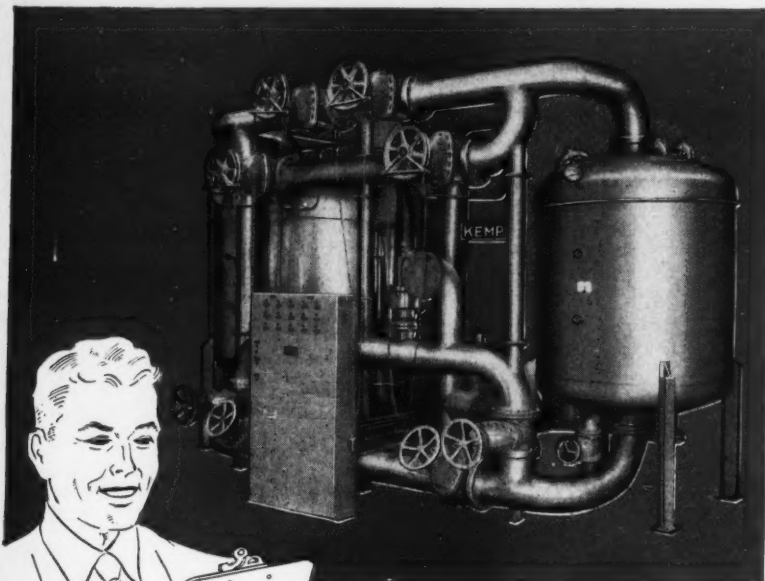
SOUTH PASADENA 11 CALIF.

Factory Branches:
Chicago • New York • Los Angeles

Beckman Instruments include: pH Meters and Electrodes • Spectrophotometers • Radiometers • Mercury-Spectra Instruments

When inquiring check CP 9265 on handy form, pgs. 2-3

There's a **KEMP DRYER** for every Moisture Problem



**Dry air, gases, liquids to
sub-zero dew points . . .
at minimum cost**

Quality, diversity, flexibility, economy . . . four good reasons why Kemp Dynamic Dryers offer you the best solution for any moisture problem. Kemp superiority of design and engineering know-how is your assurance of dependable, low-cost performance whether you dry air, gases or liquids. Many Kemp users report drying to sub-zero dew points for as little as 1/4¢ per mcf—including all charges for labor, capital investment and materials. In addition, Kemp guarantees operation of every unit to meet your specifications.

Kemp Engineering Versatile

Gas, electric or steam regeneration is standard equipment with every Kemp Dynamic Dryer . . . with or without cooling units. Also, depending on your needs, you have a choice of manual, semi-automatic or fully automatic operation. In every instance, Kemp will specify the proper desiccant suitable for your operation. Chances are there is a standard Kemp design that is ideal for your plant and saves you money too. It costs you nothing to investigate.

DYNAMIC DRYERS

For technical information and facts on how Kemp Dryers can solve your moisture problems, write for Bulletin D-27 to:

THE C. M. KEMP MFG. CO.
405 E. Oliver St., Baltimore 2, Md.



KEMP

OF BALTIMORE

INDUSTRIAL DRYERS • AIR DRYERS • LIQUID DRYERS • VAPOR REGENERATION
SUSCEPTORS • METAL DRYING EQUIPMENT • SPECIAL EQUIPMENT

When inquiring check CP 9266 on handy form, pgs. 2-3

FOR THE LABORATORY

**Direct reading of 1/10 mg
offered in balance of
200-gram cap'y . . .**

projection reader and built-in weights allow closer estimation

Uses: Fine balance for laboratory measurement.

Features: Direct reading to 1/10 milligram and even closer estimation. Sensitivity is constant at 1/10 milligram throughout the 200-gram load capacity.

Description: Selecta analytical balance is cylindrically shaped and is equipped with curved sliding doors.

This unusual feature is reported to reduce heat and light errors by deflecting the radiation, and to make the balance easier to keep clean by eliminating corners.

Only one pan is used, although the balance has all the characteristics of a twin-arm beam. All weights are applied by means of two double knobs located at table level. These weights are class S, covering the range from 10 milligrams to 200 grams and are permanently installed, though easily accessible.

The projection reader is recessed to cut glare, and covers the range from 0 to 10 milligrams automatically. To reduce heat errors it is powered by a miniature bulb and equipped with elliptical mirrors. An optical zero correction is provided. Air damping is used and stops oscillation after one swing (20 to 30 seconds).

(Selecta Balance is handled by C. A. Brinkmann & Company, Dept. CP, 261-263 Great Neck Road, Great Neck, L.I., N.Y. . . . or for more information check CP 9267 on handy form, pages 2 and 3.)

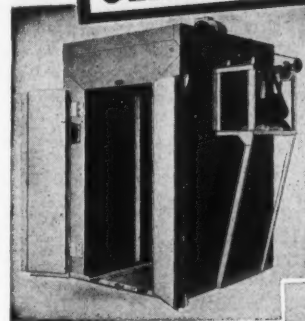
Deals with clamps for laboratory use

Product catalog features laboratory clamps of aluminum alloy construction. Advantages cited for their use are: greater safety — material has mp of 1220°F as compared to 700°F for conventional cast zinc clamps; greater corrosion resistance; and greater strength — alloys have tensile strength of 45,000 psi.

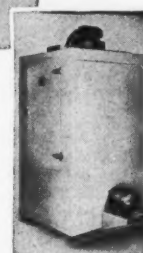
Products described include: double buret holder, 3-prong universal clamp, clamp holders, set-up frame, frame clamps, and related items. "Alumaloy Laboratory Clamps" is issued by Laboratory Industries, Inc., Dept. 4710 W. North Ave., Chicago 39, Ill. When inquiring specify CP 9268 on handy form, pages 2 and 3.

**Better in Design and Performance
Priced Right—Delivered Quickly**

GEHRICH ^{standard} OVENS



- Recirculation Heating to 500° F. for Best Operating Uniformity.
- Aluminized Steel, Insulated Panel Construction.
- Standard Safety Controls.



CABINET TYPE

For multiple tray loading; made in 3 sizes, gas or electric. Equipped with motor operated recirculating fan and F. M. approved explosion release latch.

TRUCK OR RACK TYPE

Made in 18 sizes. Direct or indirect gas or oil; steam or electric heating. Equipped with 2 or 3 motor operated recirculating fans and Factory Mutual approved explosion release latches.

BENCH TYPE

Made in 3 sizes for laboratory or small scale production.

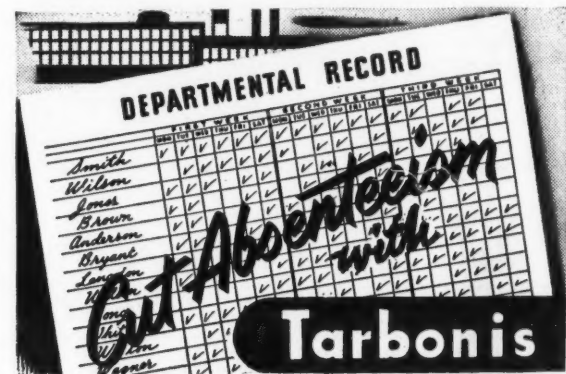
CATALOGS
ON
REQUEST

GEHRICH OVEN DIVISION

W. S. ROCKWELL COMPANY

220 Eliot Street • Fairfield, Conn.

When inquiring check CP 9269 on handy form, pgs. 2-3



Proved in hundreds of plants! You can cut absenteeism due to industrial skin irritations by using TARBONIS CREAM. Industrial physicians everywhere recommend TARBONIS as an effective aid in relieving a host of skin irritations and guarding against their recurrence. Don't jeopardize production schedules by experimenting—the solution is TARBONIS! Write for free sample and full details!

THE TARBONIS COMPANY Dept. CP
4300 Euclid Avenue, Cleveland 3, Ohio

Please send free sample of TARBONIS and literature.

COMPANY _____

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CITY _____ ZONE _____ STATE _____

BY _____ DEPT. _____

When inquiring check CP 9270 on handy form, pgs. 2-3

CHEMICAL PROCESSING

FOR THE LABORATORY

Walk-in constant temp rooms provide up to 90 sq ft of standard shelf space . . .

hold any temp constant within range 35-60°C; assemble on spot by bolting sections together

Uses: Useful in specific gravity determinations, conductivity tests, physio-chemical and botanical experiments, aging tests, and for use in bacteriological incubation.

Features: Movable and can be completely assembled on the location in 2 to 3 hours by bolting prefabricated sections together. Temperature range from 35 to 60°C can be held within close differential. Provide up to 90 square feet of standard shelf space.

Description: Walk-in constant temperature rooms are designed for laboratories where one room will

eliminate the need for a number of small individual cabinets.

Rooms are completely finished and wired. Double walls of aluminum hold 3" of insulation. Heaters with blowers assure air circulation for temperature uniformity. Three rooms are available, with the following interior dimensions: 4 x 4 x 7', 4 x 6 x 7', and 4 x 8 x 7'.

(Products of The Electric Hotpack Co., Inc., Dept. CP, Cottman Ave. at Melrose St., Philadelphia 35, Pa. . . or for more information check CP 9271 on handy form, pages 2 and 3.)

Instructive booklet on handling glass volumetric apparatus

Although information presented in this 22-page booklet is available in text books, the material is so blended with practical data that its usefulness outweighs that of academic sources. Discussion is expressed in terms intelligible to the beginner in laboratory routine as well as the professional worker. Introductory material (Chapter 1) reviews systems of weights and measures and also what is meant by standard temperature.

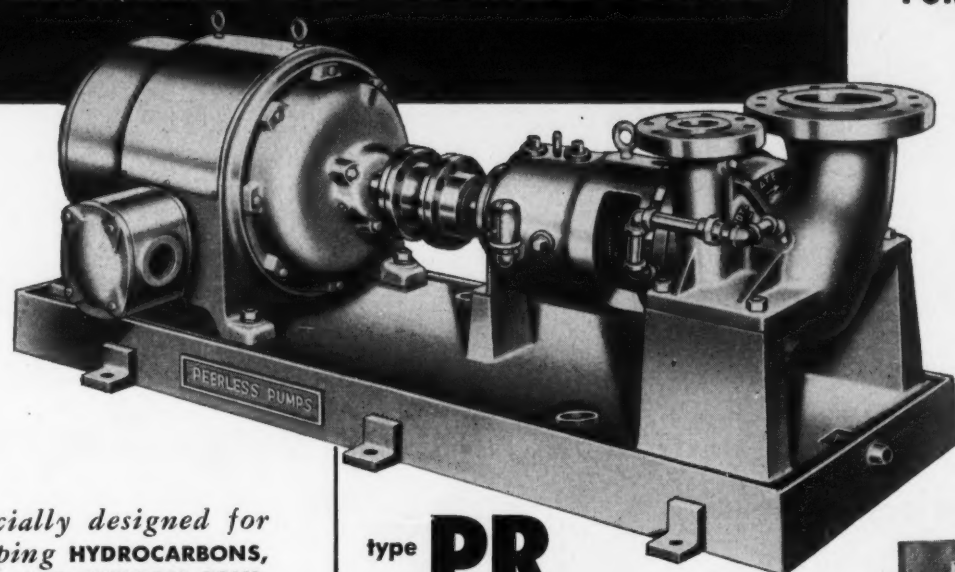
Chapter 2 deals with rules for manipulation of glass volumetric apparatus. Directions are given here on: cleaning the apparatus, method of reading meniscus, and filling and emptying techniques. Chapters 3 and 4 describe procedures for calibrating pipets and burets and also their delivery characteristics.

Drawings are used throughout to illustrate various of the manipulative techniques, and tabular material and graphs are included where pertinent to the discussion. "The Care & Handling of Glass Volumetric Apparatus" is issued by Kimble Glass, Division of Owens-Illinois Glass Co., Dept. CP, P.O. Box 1035, Toledo 1, Ohio. When inquiring specify CP 9272 on handy form, pages 2 and 3.

FEBRUARY, 1952

PEERLESS TYPE PR

A CENTER-LINE-MOUNT PUMP FOR HEAVY DUTY PROCESS SERVICE IN REFINERIES AND CHEMICAL PLANTS



Especially designed for pumping HYDROCARBONS, WATER AND CHEMICAL SOLUTIONS AT ELEVATED TEMPERATURES AND PRESSURES...

CHARACTERISTICS AT A GLANCE

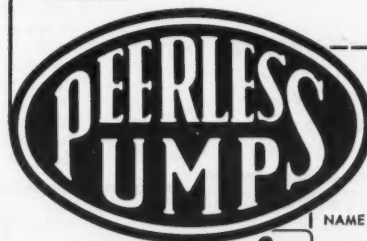
| | |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| CAPACITIES | Up to 1000 gpm |
| OPERATING HEADS | Up to 625 feet |
| TEMPERATURES | Up to 850° F. |
| CASE PRESSURES | Up to 600 psi |
| DRIVES | Horizontal electric motor is standard; others as required, such as steam turbine drive or stationary engine drive. |
| MATERIALS OF CONSTRUCTION | Liquid end can be furnished in cast iron, bronze, carbon steel, stainless steel or other materials as required for the intended service. |
| LIQUIDS HANDLED | Hot oil, propane, butane and all petroleum hydrocarbons, process liquids and water. |
| NPSH CHARACTERISTICS | Designed to operate with minimum available NPSH. |

type **PR**

FOR THOSE TOUGH HIGH-TEMPERATURE AND HIGH-PRESSURE APPLICATIONS IN REFINERY AND PROCESS WORK . . .

Maximum interchangeability, extra-heavy wall thicknesses, extra-low NPSH requirements and extra-rigid case-frame construction make the Peerless Type PR pump ideal for those rugged duty jobs in a large number of industrial services.

Furnished in a complete range of sizes, a Peerless Type PR will cover nearly all your pump needs. Available in various alloy materials. Adequate water-cooling jackets and water-cooled stuffing box, with mechanical seal optional, and heavy duty shaft with carefully balanced bearing design are features of the Peerless Type PR construction. Many sizes are available from stock in standard materials.



PEERLESS PUMP DIVISION
FOOD MACHINERY AND CHEMICAL CORPORATION

Address inquiries to Factories at:
Los Angeles 31, California and Indianapolis 8, Indiana
Offices: New York, Chicago, St. Louis, Atlanta, Dallas, Plainview and Lubbock, Texas;
Fresno, Los Angeles, Phoenix, Albuquerque, N. M., Tulsa

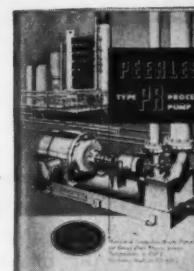
PEERLESS PUMP DIVISION
Food Machinery and Chemical Corporation
301 West Avenue 26
Los Angeles 31, California

Please send us copy of Peerless Type PR Pump Bulletin No. B-1605.

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COMPANY _____
STREET _____
CITY _____ STATE _____
Chem. Pro.

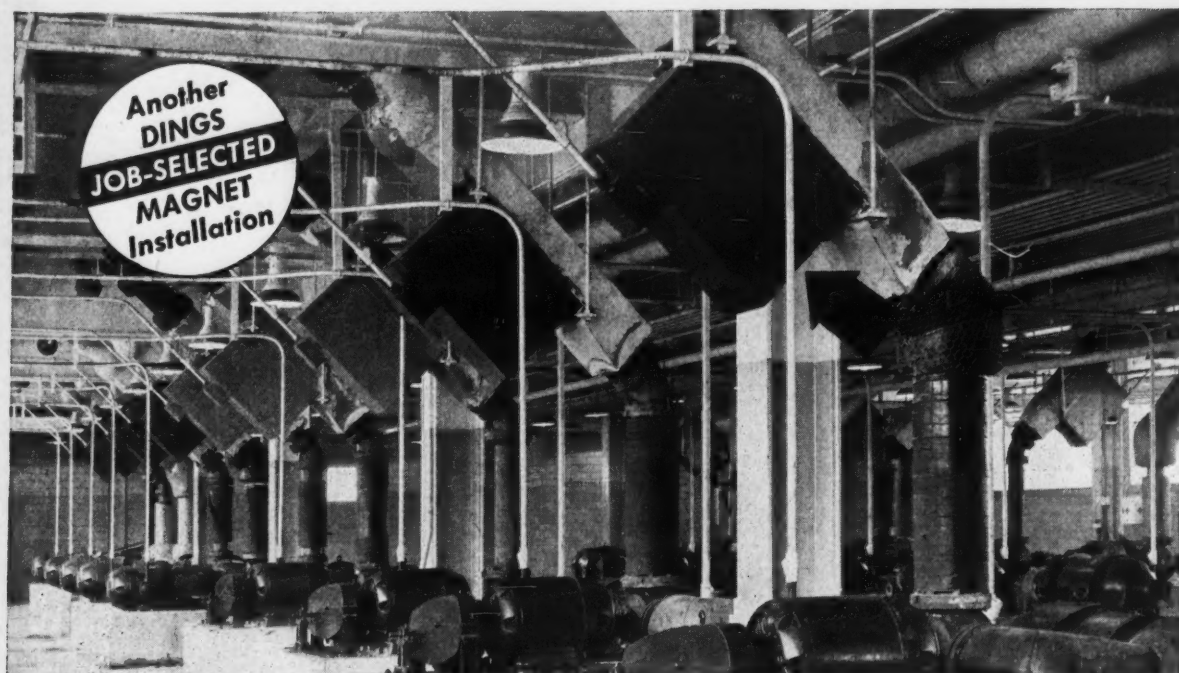
When inquiring check CP 9273 on handy form, pgs. 2-3

Peerless
**BUILDS
DEPENDABLE
PUMPS**



**New Bulletin
just off the press**

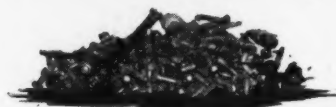
Use coupon for Bulletin No. B-1605 which describes the exact design and construction features of Peerless Type PR pumps.



Threat to \$33,000 Removed by Dings Magnets

Acetate Plant Gets Surprise;

Unloads 20 lbs. of Iron



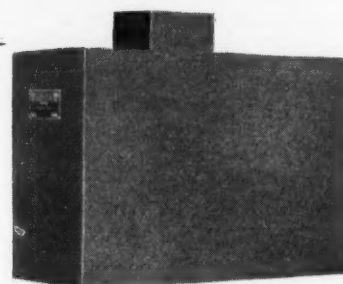
A chemical pump has no palate for iron—a single nut or bolt can wreck it. When a large acetate plant installed 30 Dings watertight rectangular electro-magnets—one ahead of each pump—they were protection conscious—said they'd be surprised and satisfied if the whole battery found one or two bolts total. In 4 months, the Dings Magnets extracted over 20 lbs. of tramp iron . . . enough to wreck all thirty pumps . . . \$33,000 worth!

This plant achieved its objective to a degree beyond expectations. Three factors were responsible: (1) applying exactly the right magnet for the job; (2) the magnet itself was highly engineered and quality built; and (3) the magnet was correctly installed. Whatever your tramp iron problem, those are the things you buy when you buy a Dings "Job Selected" Magnet. Investigate today.

Dings Magnetic Separator Company

4731 W. Electric Ave., Milwaukee 46, Wis.

*World's Largest Exclusive Builder
of Magnetic Separators*



THIS IS THE TYPE THAT DID THE JOB. The magnet that fit this job best is a Dings Rectangular (electro), a particularly versatile magnet which is effective at distances up to 18". Its triple pole design makes it effective on the most difficult jobs; fast moving conveyor belts, wet, sticky material, etc. Can be adapted in any number of ways to suit particular requirements. Catalog 301-A gives details.

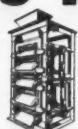
This Catalog Helps You to "Job Select" a Magnet Is the material you want de-ironed solid . . . semi-solid . . . liquid? Is it carried in chutes . . . ducts . . . conveyor belts? Catalog 5000-B lists Dings complete line by application, describes all Dings magnets from the low cost, non-electric "Perma" Plate magnet to the most powerful magnetic separators known. Send for it today.

DINGS MAGNETS

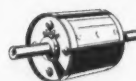
OTHER DINGS MAGNETS



Non-Electric
Plates



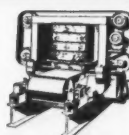
High Intensity
Induced Roll



Non-Electric
and Electric Pulleys



Non-Electric
Drums



High Intensity
Type EBK Crossbelt



When inquiring check CP 9274 on handy form, pgs. 2-3

FOR THE LABORATORY

**Responds to carbon dioxide
in five seconds, making
permanent record . . .**

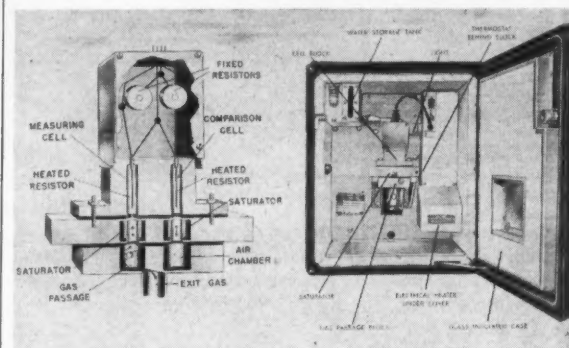
round-chart instrument is accurate to 0.25% of 20% range or 2% of higher ranges

Uses: Recorder is used for checking boiler efficiency or where CO₂ content of a gas must be recorded.

Features: Response time of the system is only about five seconds. Accuracy is 0.25% of full scale in the low (20% CO₂) range; 2% of full scale for higher ranges.

Description: Condu-Therm CO₂ Recorder takes its name from thermal conductivity, its principle of operation. Gas to be analyzed is pulled in through a filter. Before it reaches the instrument, a condenser has knocked out any excess moisture. Gas then enters the instrument and is brought to 130°F and saturated with water vapor at that temperature. Simultaneously air is pulled in, heated and saturated. Sample gas goes into one cell containing a heated resistor; air goes to a second identical cell.

These two cells form two arms of a bridge circuit. Each resistor is sensitive (e.i., changes its resistance) to temperature. Difference in the thermal conduction of the



Drawing of cabinet with open door shows measuring cells directly in center. Cutaway to left is an expanded picture of the cells and bridge

gas sample and air results in a difference of resistance between the two cell-resistors. Bridge is brought back into balance by the familiar motor-slidewire combination which, of course, also powers the recording pens.

Instrument requires about 70 w (110 v, 60 cps) in addition to water supply for the condenser and aspirator. Up to four pens can be driven to furnish four continuous CO₂ records. Round-charts are 12" diam, run 24 hr and are available in several ranges between 0 to 15% and 0 to 100%.

(Product of The Hays Corporation, Dept. CP, Michigan City, Ind. . . or for more information check CP 9275 on handy form, pages 2 and 3.)

**Delivers 1/16 horsepower
yet fits into lab setups
with ease . . .**

operates at three predetermined speeds — 300, 600, and 900 rpm — from AC or DC power

Uses: Laboratory mixing and stirring.

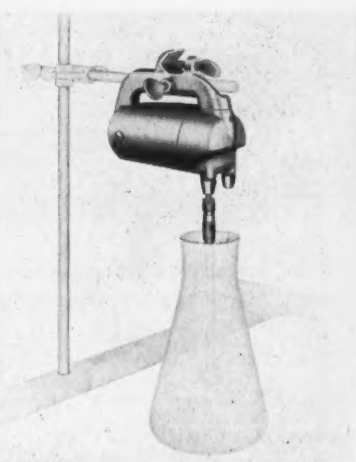
Features: Mixer is UL approved; delivers 1/16 hp.

Description: Mighty Midget Stirrer uses a series-wound, 65w motor. It operates from 110v AC/DC and

CHEMICAL PROCESSING

FOR THE LABORATORY

a 220v AC/DC model is available. Specially designed mounting bracket permits the stirrer to be mounted in any position. In normal position, the center of gravity is below the support rod. This prevents accidental flipping over and breakage. It can be mounted by sliding over a rod, or can be hooked on or removed without disturbing any setup. Bracket also permits mounting the stirrer at any center distance that might be required.



Shows stirrer in position

Three-jaw chuck, mounting bracket, support rod, cord and plug are all furnished with the unit. Chuck is self-adjusting; takes 1/4" rod. Special stirring rod recommended is Teflon covered stainless and designed to stir efficiently without producing objectionable vortex.

Unit is finished in gray hammerloid and carries knob for selection of the three speeds. Speeds of 300, 600, and 900 rpm are reported by manufacturer to be optimal for lab use.

(Mighty Midget is a product of Laboratory Industries, Inc., Dept. CP, 4710 West North Ave., Chicago 39, Ill. . . or for more information check CP 9276 on handy form, pages 2 and 3.)

Tests insulation at 75,000 volts

Uses: Tests insulation, indicating weak points before actual service breakdowns occur.

Description: TAKK Insulation Tester is a portable unit for generating high voltages. It is manufactured with



High-voltage insulation tester

four specific ranges: 0 to 15, 0 to 30, 0 to 45, and 0 to 75 kv. Meters allow tests of the circuits or material without causing damage. Though very accurate, the instrument is rugged.

(Product of The John Hewson Company, Dept. CP, 106 Water St., New York 5, N. Y. . . or for more information check CP 9277 on handy form, pages 2 & 3.)

FEBRUARY, 1952

GARLOCK PACKINGS and GASKETS

made of *Teflon**



*Teflon is the Du Pont Company's trademark for tetrafluoroethylene resin.

*Extremely Inert to Chemicals;
Heat Resistant; Tough; Durable*

GARLOCK packings and gaskets made of *Teflon* solve the problem of sealing against acids and chemicals of all kinds.

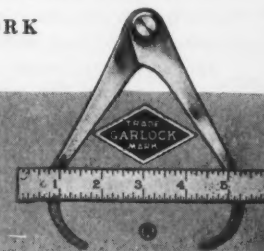
These *Teflon* products, fabricated in the GARLOCK factories, are unaffected by any acid and are highly resistant to all organic solvents and alkalies. They operate at temperatures from below -90° F. up to +500° F. and have high mechanical strength and a low coefficient of friction within that temperature range.

For use on valves, pump rods or shafts and any other equipment in the chemical industry, GARLOCK produces several types of braided and molded *Teflon* packings. For gasketing flanged joints of all kinds, including glass and porcelain flanges, *Teflon* envelope gaskets or solid *Teflon* gaskets are available in required sizes and shapes.

To avoid frequent shut-downs and reduce your packing costs, use GARLOCK packings and gaskets made of *Teflon* on all your equipment handling acids or chemicals. Write for pamphlet.

THE GARLOCK PACKING COMPANY, PALMYRA, NEW YORK
In Canada: The Garlock Packing Company of Canada Ltd., Toronto, Ont.

GARLOCK



When inquiring check CP 9278 on handy form, pgs. 2-3

In **ANY**

ELECTRICAL
CHEMICAL
PHYSICAL
ELECTRONIC

Laboratory



Type 650-A
Impedance Bridge
\$260.00

This self-contained, battery-operated, direct-reading and portable bridge is always set-up and ready for making almost all routine basic electrical measurements. It can be used on both d-c (with a zero-center galvanometer null indicator) and 1,000 cycle a-c hummer (built-in, for external headset balance). It measures:

Resistance 1 milliohm to 1 megohm
Capacitance 1 micromicrofarad to 100 microfarads
Inductance 1 microhenry to 100 henrys
Dissipation Factor (R/X) .002 to 1
Storage Factor (X/R or Q) .02 to 1000

Thousands of these bridges are in use in laboratories all over the world. It has no equal for compactness, portability, sufficient accuracy for most routine measurements and general handiness.

Write for Complete Details

GENERAL RADIO Company 275 Massachusetts Ave.
Cambridge 39, Mass.
90 West St. NEW YORK 6 920 South Michigan Ave. CHICAGO 5
1000 North Seward St. LOS ANGELES 38



When inquiring check CP 9279 on handy form, pgs. 2-3

FOR THE LABORATORY

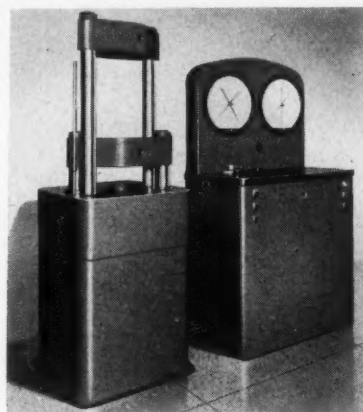
**Small testing unit
has 120,000 lb
capacity . . .**

opening adjustable from 1 to 24" with 6" testing stroke

Uses: Strength of material tests.

Features: Small and self-contained, unit can exert a maximum force of 120,000 lb. Maximum opening is 24" including 6" stroke.

Description: Model 120-H Universal Testing Machine affords 15" of clear space between the vertical columns. Speed of the power stroke can be continuously adjusted between 0 and 2 inches/min. Lower gripping head is supported by two long col-



Furnished in any two of six ranges

umns and a vertical screw integral with the hydraulic cylinder. It is positioned with a motor drive through its 20" range.

Two ranges, 0 to 120,000 lb and 0 to 30,000 lb, are standard, but any two of six ranges are available. (The other four: 0 to 6000, 0 to 12,000, 0 to 24,000, and 0 to 60,000 lb)

Load indicator is a Bourdon gage working from the pressure in the hydraulic cylinder. Accuracy is within 1% or one dial division. Recorder may be furnished with the tester, if desired. Floor space for the two units shown is 31 x 74".

(Built by Baldwin-Lima-Hamilton Corp., Dept. CP, Philadelphia 42, Pa. . . or for more information check CP 9281 on handy form, pgs. 2 & 3.)

Plastic heating tapes topic of booklet

Uses, methods of application, mechanical, thermal and electrical characteristics of electrically conductive plastic are covered in publication. Material is stated to provide highly uniform heat distribution and maximum heat trans-

"101" CORROSION PROBLEMS



**Ucilon* Protective Coating Systems maintain equipment
against attack of many strong chemicals and corrosives**

Unlike ordinary paints, Ucilon Coatings give enduring protection against a "hundred and one" strong chemicals or corrosives. Used in systems of coatings, the various Ucilon Coatings form a film highly resistant to strong acids, alkalis, alcohols, salt solutions, moisture, oils and other paint-destroying agents.

Not only do they help keep vital equipment in continued service, but also reduce the labor and down-time expense of frequent painting.

Send today for the CONDENSED UCILON BULLETIN that lists the 101 common corrosion problems and the Ucilon Coating Systems that offer you long lasting protection against each at lowest cost.

*Trade Mark

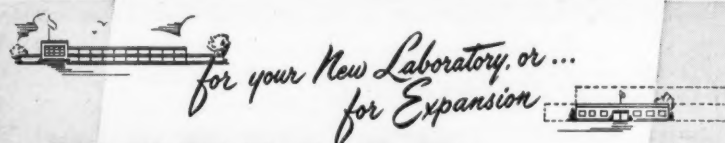
UCILON Protective Coatings

Trade Mark

One Group of the Many **UNICHROME** COATINGS FOR METALS

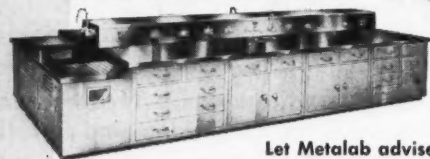
UNITED CHROMIUM, INCORPORATED 100 East 42nd Street, New York 17, N.Y.
Detroit 20, Mich. - Waterbury 20, Conn. - Chicago 4, Ill. - Los Angeles 13, Cal.
In Canada: United Chromium Limited, Toronto, Ont.

When inquiring check CP 9282 on handy form, pgs. 2-3



METALAB offers you the Finest in LABORATORY EQUIPMENT

WITHIN YOUR BUDGET

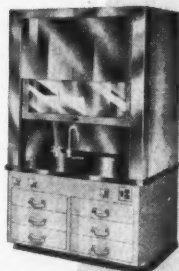


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- How to plan your Laboratory for greater efficiency.
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Our new modern plant is geared to give you the close cooperation and rapid service you require.

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230 Duffy Ave., Hicksville, L. I., N. Y.

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P

**GRIEVE-HENDRY
PORTABLE
ELECTRIC
OVENS...**

*Standard Models
For Every
Special Need!*

Model CR-1
10 cu. ft. capacity—30" wide x 25" deep x 24" high. Removable shelves and drip pan. **\$7950**
F.o.b. Chicago

Portable. Costs less than 5c per hour to operate. Adjustable temperature control to 225° F. Fan driven forced air circulation. Uniform temperature throughout. Plugs into any 110V wall outlet—no special wiring required.

Can be used in a group or bank. Use them on the production line—save handling—hauling.

Other standard models with temperature ranges to 1000°F. available. Write for literature.

GRIEVE-HENDRY CO., INC.

1649 W. Haddon St., Chicago 22, Illinois

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CHEMICAL PROCESSING

NEW THREAD COMPOUND

Licks Stud Freezing
Even at 1800° F.!

SAFE for all high temperature applications!
SAFE for Stainless and Alloy Steels, too, will not pit or corrode!
IDEAL as a cutting compound to prevent galling of Stainless Steel!

Make a convincing test of Fel-Pro C-5 "Hi-Temp" Thread Compound at our expense. Then you can be sure that C-5 will do everything we say it will do. See how it cuts heater dismantling time—how it cuts costly stud breakage and eliminates pitting. Then you will standardize on C-5 just as have some of the nation's largest refineries, utilities and process industries. Write for **FREE** Sample and data sheet **TODAY!**



**FREE
TEST SAMPLE!**
Send for **YOURS
TODAY**

**FEL-PRO
C-5
"HI-TEMP"
THREAD
COMPOUND**

FELT PRODUCTS MFG. CO.
1515 CARROLL AVENUE • CHICAGO 7, ILLINOIS

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**SAVES
TIME
EFFORT
ERRORS**

LABELON

PLASTIC

Write on it

TAPE

**WON'T SMUDGE
★
STAYS CLEAN
FOREVER
★
RESISTS: DIRT • OIL
WATER • ACIDS**

**STICKS WITHOUT
MOISTENING**



PERFECT for LABORATORY, STOCK ROOM, OFFICE

Nothing else like LABELON—the amazing "Write on it" plastic tape! Use it to mark test tubes, glass vessels, test batches, specimens . . . to identify circuits, panel boards, fuel lines, instruments . . . to label stockroom shelves, bins, hard-to-mark objects. Ideal, too, for office files, folders, stored records, etc.

LABELON TAPE sticks without moistening to any smooth, clean surface — yet can be quickly removed. Resists heat up to 150°. Just write on it with pencil or stylus—message won't smudge. Choice of widths and colors. Handy dispenser with cutter bar.

See your nearest dealer, or write for sample and prices.

LABELON TAPE CO., Inc.

450 Atlantic Ave., Rochester 9, N.Y.

Write to
Dept. CP

When inquiring check CP 9285 on handy form, pgs. 2-3

FEBRUARY, 1952

FOR THE LABORATORY

fer. "Film Type Heating Elements" is issued by Electrofilm Corp., Dept. CP, 7116 Laurel Canyon Blvd., North Hollywood, Calif. When inquiring specify CP 9286 on handy form, pages 2 and 3.

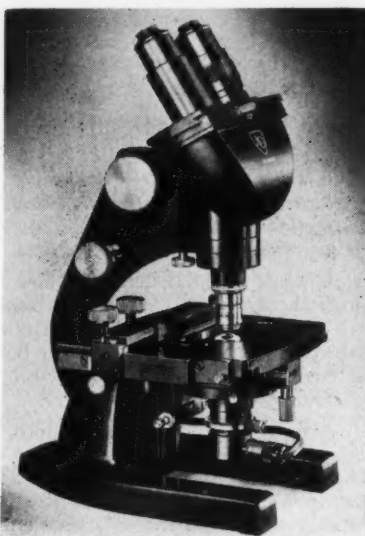
**Improve illumination
on dark field
"mikes" . . .**

light strikes at an angle to avoid entering objective

Uses: Observation of micro particles of a refractive index and color similar to the medium in which they exist and, because of this, are not readily seen in ordinary bright field.

Features: Special 97X oil immersion objective is supplied with built-in iris diaphragm to eliminate need for a funnel stop. Remarkably light-weight binocular bodies.

Description: In AO Dark Field microscopes, the specimen is made luminous and visible by a cone of light striking it from all sides and at an angle so as to avoid entering the objective. Light source can be centered in relation to condenser optics,



Dark field microscope

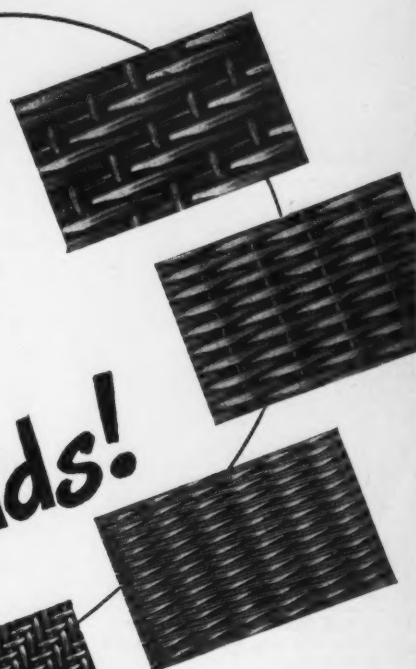
and the condenser is adjustable for slide thickness from 1.15 to 1.25 mm.

Monocular and binocular instruments are available, and they both have hinged sub-stages that open to facilitate cleaning. A constant ratio lever insures accuracy of the 2 micron scale through entire focusing range.

(AO Dark Field microscopes available from American Optical Co., Dept. CP, Buffalo 15, N. Y. . . or for more information check CP 9287 on handy form, pages 2 and 3.)

**NEWARK
Metallic
FILTER
CLOTHS**

**Weaves
that
STOP
the Solids!**



Enlargements 4X

Here are five different weaves of Newark Metallic Filter Cloths. All different in the arrangement of the strands; hence different also in their functioning.

Study the shape of the solids in your solution being filtered. That's just as important as the size, if you want clarity of filtrate. Then write us fully about the solids and we'll be glad to recommend the weave of the cloth that will "stop" them.

Many malleable metals are still available so, if necessary, we can probably supply you with a material that will also withstand highly corrosive conditions. When writing, also give solution characteristics.

All Newark Filter Cloths are woven in our own plant, on our own looms, by our own skilled weavers.

Our entire line of Filter Cloths, Wire Mesh and Space Cloth, Sieves, "End-Shak" Testing Units and other Newark Products are described fully in our new Catalog D. Send for a copy.

**NEWARK
for ACCURACY**

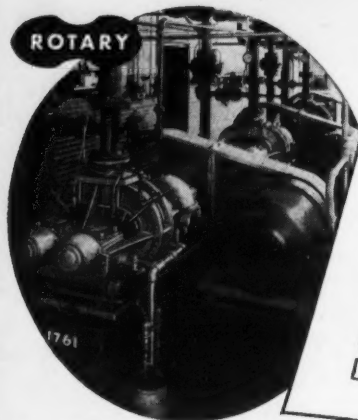
**Newark Wire Cloth
COMPANY**

351 VERONA AVENUE • NEWARK 4, NEW JERSEY

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1311 Widener Bldg. 3100 19th St. 20 N. Wacker Dr. 520 Maritime Bldg. 1400 So. Alameda St. P. O. Box 1970

When inquiring check CP 9288 on handy form, pgs. 2-3

No more "off the cuff" decisions when you compare blower values



Type RCG Rotary Positive Gas Pump,
capacity 269 cfm, used in chemical
manufacturing.

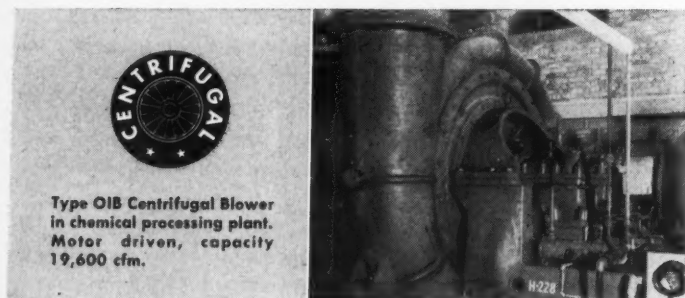
- ☐ Choice of Rotary or Centrifugal
- ☐ Capacity matched to the job
- ☐ Easy accessibility
- ☐ Ruggedness
- ☐ Ease of installation
- ☐ Ability to handle overloads
- ☐ Long-time durability
- ☐ Freedom from breakdowns
- ☐ Low maintenance costs
- ☐ Engineering assistance
- ☐ Proved reputation of maker
- ☐ Customer satisfaction

If you are considering new equipment for handling gas or air, we suggest you examine the essential values listed above, before you make your final selection. These factors will help you determine the unit that will best match your specific application, and that will give you the most satisfactory, economical performance.

You'll find that R-C equipment rates high in every one of these essential factors. With capacities ranging from 10 cfm to 100,000 cfm or higher, at moderate pressures, and with the exclusive *dual-ability* line of Centrifugal or Rotary Positive types, you have a wide choice to meet the most exacting needs.

If you'd like to tell us about your specific problem, we'll gladly send detailed information for comparison, or supply engineering help from our 98 years of blower building experience.

ROOTS-CONNERSVILLE BLOWER CORPORATION
522 Richland Avenue, Connersville, Indiana



Type OIB Centrifugal Blower
in chemical processing plant.
Motor driven, capacity
19,600 cfm.

Reg. U. S. Pat. Off.

ROOTS-CONNERSVILLE



ONE OF THE DRESSER INDUSTRIES

When inquiring check CP 9289 on handy form, pgs. 2-3

FOR THE LABORATORY

**Reaches test temperature quickly,
providing 600 cubic inch
working space . . .**

selected temperature, in -65 to $+275^{\circ}\text{F}$ range, is maintained within 3°F

Uses: Flexible testing of equipment components and materials at fixed temperatures.

Features: Since only a relatively small space needs to be heated, the long wait for temperature controlled rooms to come to equilibrium is avoided. Further, this unit can be used at two or three different temperatures within a short period.

Description: Thermally insulated working space of the TC-1 Temperature Test Chamber is 600 cu in with comfortable margins. (Chamber is actually 787.5 cu in — $7 \times 7\frac{1}{2} \times 15''$.) Heating or cooling rate in going from room temperature to either extreme of temperature



Test chamber and thermostat at left; controls at right

averages about 5° per min. Elevated temperatures are held by means of an adjustable thermostatic switch governing operation of a 3-heat resistance element. Heater can operate at 125, 250, or 500 w. Temperature is maintained within 3°F of setting.

Cooling is accomplished with dry ice. With a full ice load the unit can maintain a temperature of -65°F for $3\frac{1}{2}$ hours when no heat is generated by the equipment or material being tested. An air flow of 100 to 120 cfm is maintained by a blower wheel powered by a split-phase motor.

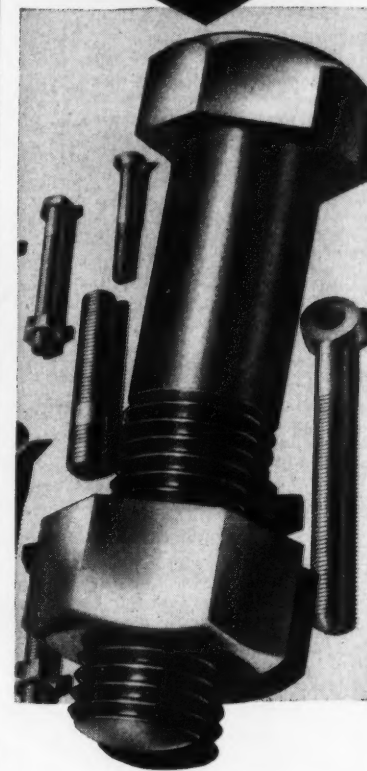
Insulation is 2" thick glass fibre, sealed in to reduce moisture collection. Provision is made for up to 15 electrical or mechanical connections to the product being tested. These openings can be seen on cabinet door (left end in photo). Unit is $16\frac{1}{2} \times 12 \times 48''$ long. Total power required is 5 amp at 115 v 50/60 cps.

(Built by Statham Development Corp., Dept. CP, 12411 W. Olympic Blvd., Los Angeles 64, Calif. . . or for more information check CP 9290 on handy form, pages 2 and 3.)

Compilation of analytical methods for light hydrocarbons

Largest collection of specific analytical procedures yet published in the field of light hydrocarbons is found in 639-page book. Material presented is the culmination of work performed by the Butadiene Producers' Committee on Specifications and Methods of Analyses. Chapters 2 and 3 describe briefly the various processes employed for

First for
**BOLTS
NUTS
STUDS**



- ★ Carbon Steel
- ★ Heat-treated
- ★ Alloy Steels
- ★ Stainless Steel
- ★ Silicon Bronze
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You can count on a uniform Class 3 Fit when you buy Pawtucket threaded fasteners. Accurately made in standard dimensions — or to your specifications.

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Use Headed and Threaded Fasteners for Economy and Reliability

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THE BOLT MAN
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THE PLACE TO SOLVE YOUR BOLT PROBLEMS
T.M. REG.

When inquiring check CP 9291
on handy form, pgs. 2-3

CHEMICAL PROCESSING

the production of butadiene and the reasons for the specifications and applicable test methods.

Specifically prepared for laboratory personnel, not generally familiar with the many methods of attacking problems in light hydrocarbon analysis, is Chapter 4. It points out some general schemes of analysis such as low temperature distillation and mass spectrometer procedures. Chapters 5 and 6 give instruction on sampling and handling of light hydrocarbons and associated safety precautions.

Chapter 7 comprising the bulk of the book contains the official test methods issued by the Office of Rubber Reserve. Drawings and photographs are used to illustrate some of the equipment set ups, and graphs and tables are included where pertinent. To obtain "Light Hydrocarbon Analysis", remit \$15 direct to Reinhold Publishing Corp., Dept. CP, 330 W. 42nd St., New York 18, N.Y. When inquiring specify CP 9292 on handy form, pages 2 and 3.

**No pre-burning needed,
no blank needed . . .**

carbon, sulfur, volatiles are not present in combustion boat due to special care in manufacture, shipping

Uses: High-temperature combustion boats are especially recommended for steel, blast furnace, drop forge, and foundry analyses. They can be used for volumetric carbons and sulfurs, and gravimetric carbons in metal analysis.

Features: Pre-burning, blanks, and corrections for sulfur and carbon are eliminated because the boats are carbon- and sulfur-free.

Description: Boats are reported not to crack or burn through at tests running to 2400°F. Recess is 80 x 8 x 6 mm deep.

Boats are not touched by human hands after they have been fired in manufacture. To insure against contamination, they are sealed without liners in de-greased, unlacquered metal cans.

(Sample package of Combax boats is available from Fisher Scientific Co., Dept. CP, 717 Forbes St., Pittsburgh 19, Pa. . . or for more information check CP 9293 on handy form, pages 2 and 3.)

**X-ray diffraction catalog
explains, illustrates use**

This 60-page catalog pictures, describes, and explains the necessary equipment for all sorts of X-ray diffraction work. Most of the equipment shown is designed for interchangeability and work in conjunction with manufacturer's other equipment. Components covered include tubes, rectifiers, cameras, various brackets, illuminators, measuring devices, monochromators, and others. Equipment applies to spectrometry, fluorescence analysis, and diffraction.

Six fold-out charts are included which show typical analyses of quartz (front and back reflection), lead nitrate, tungsten, a hydrocarbon, and the mineral system albite-micro-cline.

Adequately illustrated, this two-color catalog contains a good deal of well written text designed to inform the technical man not familiar with the field and, at the same time, give all the pertinent details to the experienced operator evaluating this equipment.

"X-ray Diffraction and Geiger-counter X-ray Spectrometric Equipment" is issued by the Research and Control Instruments Div., North American Philips Co., Inc., Dept. CP, 750 S. Fulton St., Mount Vernon, N. Y. When inquiring specify CP 9294 on handy form, pages 2 and 3.

RIGHT IN YOUR OWN BACK YARD...

BY WEST

**MOPWELL, BEST CLEAN-UP
ON THE TEAM, SHOWS THE
VISITING FIREMEN A FEW
TIMESAVERING TRICKS...
THANKS TO
LUSTRECLEAN**

**NOW YOU SEE
GENTLEMEN,
LUSTRECLEAN
WASHES AND WAXES
IN ONE SIMPLE OPERATION...
SAVING ME HOURS EACH
WEEK FOR BOWLING,
TELEVISION, LOAFING
AND OTHER PLEASANT
ACTIVITIES...**

**AND YOU'LL
NOTE, I DON'T
EVEN USE A
SCRUBBING
BRUSH...**

**AND TO THINK
I'VE BEEN WEARING MY
MOPS DOWN TO THE HANDLE...
WHEN I COULD HAVE BEEN
USING LUSTRECLEAN
THAT REQUIRES NO RINSING.
AND LISTEN TO THIS...IT'S
GOOD FOR WOODWORK
TOO...**

**LET'S BLACKBALL
MOPWELL OUT OF THE
BOWLING LEAGUE FOR
NOT TELLING US ABOUT
LUSTRECLEAN...
THAT IS, UNLESS HE
BUYS THE BEERS NOW
THAT HE'S ALMOST
THROUGH...**

**IT LEAVES
A SURFACE
CLEAN AS
A FROZEN
MILLPOND!**

THE MORAL TO OUR STORY? Make the job easier for your maintenance personnel . . . and you automatically lower your maintenance costs. Let 'em wax as they clean—with a specially formulated material that performs 3 operations in one!

LUSTRECLEAN (pine-scented or plain) cleans . . . deodorizes . . . and deposits a light film of wax. Effective on any type of surface! No heavy scrubbing. No rinsing. Mop dry . . . buff the film lightly if a soft satiny finish is desired! Save time and labor cleaning floors, walls, woodwork—wherever excessive wear and heavy traffic has made daily maintenance a back-breaking job.

LUSTRECLEAN really cleans! Its emulsifying action loosens the most persistent dirt, grime . . . hard-to-remove rubber burns. No need to use harsh soaps or injurious chemicals. Proof? Ask for a sample and test it on the spots and blemishes your present cleaner won't remove!

Pine Lustreclean is only one of many WEST products formulated for the promotion of sanitation. Others include floor sealers and waxes . . . washroom service . . . disinfectants . . . deodorants . . . insecticides . . . cleaners . . . soaps . . . protective creams. West is the exclusive distributor of Kotex Sanitary Napkins sold through vending machines.



42-16 West Street
Long Island City 1, N. Y.
(64 BRANCHES IN U.S. AND CANADA)

SAVE \$ \$ \$. . . WAX as you WASH

I'd like to try a sample of Lustreclean

Pine-Scented ☐ Plain ☐

Name _____ Title _____

Company _____

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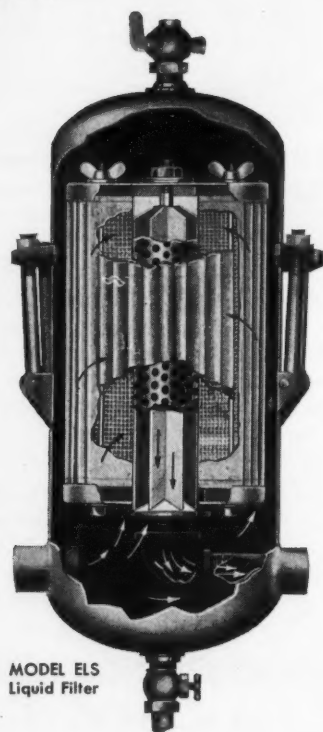
City _____ Zone _____ State _____

Dept. 45

When inquiring check CP 9295 on handy form, pgs. 2-3

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**"STAYNEW
LIQUID FILTERS
KEEP US OUT!"**



MODEL ELS
Liquid Filter

Rust, pipe scale and other impurities are stopped completely by Staynew's versatile ELS Liquid Filter. Ideal for application in countless industries where clean liquids are required, the Model ELS removes the finest particles with minimum loss of pressure. And Staynew's liquid filtration process *will not* change chemical properties in any way.

No matter how complex your filtration problem, look to Staynew for the answer. The Dollinger Corporation maintains a fully equipped research laboratory to design filters for any type of liquid filtration.

- Most versatile filter made.
- Widest range of filtering media (both fabrics and metallic meshes).
- Greatest active filtering area for any given space.
- Radial Fin Insert Assembly—easily and quickly installed, as a unit, in field.
- SLIP-ON Filtering Medium easily changed or replaced in the field.
- "Swing-bolt" head construction for easy inspection and servicing.

For Complete Information, write today
for Staynew Liquid Filter Bulletin D-IL

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DOLLINGER

CORPORATION

69 Centre Pk., Rochester 3, N. Y.

ALL TYPES OF FILTERS FOR EVERY INDUSTRIAL NEED

When inquiring check CP 9296 on handy form, pgs. 2-3



FOR THE LABORATORY

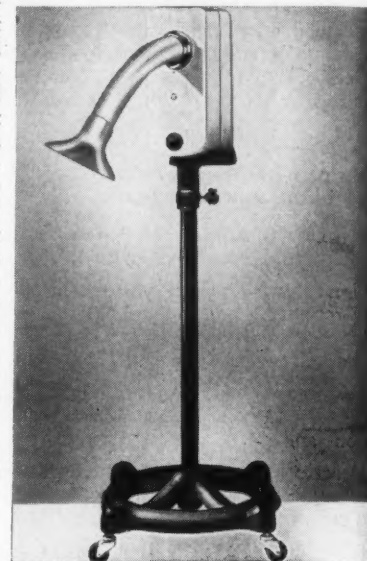
**Requires only standard power
to provide steady stream
of warm or hot air . . .**

heater-blower unit is mobile, adjustable to various heights and directions

Uses: Drying and conditioning and similar small tasks around the laboratory and plant.

Features: Sole requirement for operation is a 110-125v AC/DC outlet.

Description: Electric-Aire Industrial Dryer is a mobile unit with position adjustments and controls for air rate and heating. Adjustable height stand is mounted on four ball bearing casters and heater-blower unit turns through a full 360°. In addition to this, the unit is equipped with a two-foot flexible hose which provides for directing the air at any angle. Total adjustment range, then, is from below 36 inches to above 50 inches. Safety lock prevents slipping when desired position has been attained.



Controls can be locked

Both air flow and heat controls can also be locked in any setting. This prevents tampering with desired conditions. Hose diam is $3\frac{5}{8}$ inches. Nozzle shown is supplied, but other $3\frac{5}{8}$ inch nozzles are available. Mechanism of the unit is supported by rubber cushions for quiet operation and also to prevent shock to operator. Cabinet and blower housing are of cast aluminum. Overall weight of unit, including stand, is 72 lb.

(Supplied by The Electric-Aire Engineering Corp., Dept. CP, 209 W. Jackson Blvd., Chicago 6, Ill. . . or for more information check CP 9297 on handy form, pages 2 and 3.)

Moisture content tested rapidly in wide range of samples

Described in 11-page bulletin is a moisture testing unit whose essential components are a motor driven blower, heating element, thermostat, sample pan, case and timer. Rapid drying action, and thus a quick determination, is obtained by directing a stream of air at controlled temperature and velocity over or through a sample.

Operating temperature range of four of the units is 150 to 300°F, while a drying oven is specified with a range of 190 to 400°F (reached from cold in two minutes). Using various sample weights (5 to 50 gm) and at specific temperatures, the following materials were determined in the indicated time intervals (minutes): sand, 3; soap powder, 9; liquid wax, 15; fine salt, 7; glass powder, 20; and color pigment, 12.

Analytical balances and weights, aluminum drying dishes, and rapid acting dessicators are other items

CHEMICAL PROCESSING

discussed in the bulletin. The last named are fan equipped to bring about fast dissipation of heat. "Moisture Testing" is issued by Harry W. Dietert Co., Dept. CP, 9330 Roselawn Avenue, Detroit 4, Michigan. When inquiring specify CP 9298 on handy form, pages 2 and 3.

Ten drawers in storage cabinet for radioactive samples each have ten sample holders . . .

if contamination occurs, plastic sample holders replaceable inexpensively

Uses: Storage depot for radioactive samples.

Features: Plastic sample holders are easily replaced at little cost to the user if contamination occurs.

Description: Model N4 cabinet, as illustrated, is provided with 10 drawers, each containing ten sample holders. Latter permit variety of sizes of samples to be held, and each one within its drawer is numbered for



Open drawer at bottom—left shows four of the plastic sample holders. Dust-tight cover is at right

convenience and reference. A dust-tight cover, which is provided, may be placed over the cabinet to eliminate possibility of contamination of samples. Sample holders are plastic cups which are pressed into holes in the trays.

(Model N4 cabinet is obtainable from Nuclear Instrument & Chemical Corp., Dept. CP, 229 W. Erie St., Chicago, Ill. . . or for more information check CP 9299 on handy form, pages 2 and 3.)

Gives pertinent data on 7 analytical reagents

Information is supplied on seven analytical reagents in group of data sheets which average three pages in length. Chemicals detailed include: ether, sodium oxalate, potassium acid phthalate, arsenic trioxide, potassium dichromate, benzoic acid and sodium carbonate. Brief treatment is accorded the properties and limits of impurities of the reagents, whereas various analytical applications are discussed more thoroughly.

"AR Data Sheets 1-7" are issued by Mallinckrodt Chemical Works, Dept. CP, Second and Mallinckrodt Sts., St. Louis 7, Mo. When inquiring specify CP 9300 on handy form, pages 2 and 3.

FEBRUARY, 1952



AN ADVERTISING PAGE

by the HOUSE OF J. HAYDEN TWISS

A review of interesting products and services

NEW DYE STRIPPER PHENOMENAL

—Antara Chemicals, Division of General Dyestuff Corporation, is ready to go into commercial production on Peregene A—a new and amazingly effective stripping aid for vat, sulfur and direct dyeings. The bond of attraction between these dyes and Peregene is so strong that the affinity of the dislodged dye in the stripping bath is permanently shifted away from dyestuff on cotton to dyestuff on Peregene. Comparison tests indicate that in many cases the new stripper is ten times as effective as other agents considered excellent until now. Peregene A, described as a colloidal dye sequestering agent, stems from Antara's acetylene chemical program. Further details can be secured from the company at 435 Hudson Street, New York 14, N. Y.

ISCOLIZED GUMS—This proves the point that you can teach an old dog new tricks. The water soluble gums—Arabic, Karaya, Locust Bean, and Tragacanth, have been taught new tricks by ISCO. These gums are now processed so as to give them ready dispersion qualities. This enables the user to make up various solutions in a jiffy, eliminates presoaking, does not change the viscosity and the gum is accepted for food purposes. You can observe these quick results by asking Innis, Speiden & Co., Inc., 117 Liberty St., New York, for a sample of Iscolized Gum.

NUCHAR RECLAIMS CANDY TRIMMINGS

—Among the interesting applications for Nuchar—active carbon marketed by the Industrial Chemical Sales Division of West Virginia Pulp & Paper Co.—is the removal of color and flavor from candy trimmings, permitting their reuse as a neutral syrup in new candy batches. Hard candy, chocolate and starch candy trimmings may be so treated. Nuchar, of course, is also used as an adsorption purifier for sugars, fats and oils, alcoholic beverages, water, chemicals, pharmaceuticals, petroleum products, in air conditioning and the treatment of wastes. Further background on Nuchar applications can be secured by contacting the company at 230 Park Ave., N. Y. 17, N. Y.

HANDLING METALLIC SODIUM

—National Distillers Chemical Corp. has just issued the most complete booklet ever published on the safe handling of metallic sodium, from one pound bricks to 80,000 pound tank cars. It covers, in 24 pages, the properties of and commercial specifications on metallic sodium, shipping and handling methods, procedure for cleaning process equipment, safety precautions and first aid, plus a bibliography. The booklet, entitled "Handling Metallic Sodium," was prepared for users, prospective users, and those concerned with specifications or methods of shipping and handling. It is available on request from the company's Technical Service Department at Ash-tabula, Ohio.

LARGEST VACUUM FLASH-COOLING SYSTEM UNDER CONSTRUCTION

—The Croll-Reynolds Co., Inc., 17 John St., N. Y., manufacturers of Evactor steam jet vacuum equipment, is now building a 3000 ton capacity vacuum flash-cooling system for the Groton, Conn. plant of Charles Pfizer and Co. This will be one of the largest flash cooling systems ever installed. The cooling effect of this unit will be equal to the melting of 3000 tons of ice in 24 hours. The new unit, scheduled for installation some time in January, will be used, among other purposes, for the production of the vitally important antibiotic terramycin, available only from Pfizer.

NEW GAF POLYMER AVAILABLE

PVM/MA is another interesting material which has been added to General Aniline's growing list of acetylene derivatives. This linear polymer, consisting of alternating methyl vinyl ether and maleic anhydride units, is water-soluble over the entire pH range. It shows a high tolerance for most metal ions. In addition, it is soluble in many organic solvents, will react with alcohols and amines, and can be insolubilized by various means. PVM/MA's properties suggest its use in adhesives, binders, ceramics, coatings, detergents, emulsions, latex, leather, paper, textiles, and thickeners. New Product Bulletin No. P-103 describing this material is available from the Product Development Dept., General Aniline & Film Corp., 22 Center Square, Easton, Pa.

COMBATING MAGNESIUM FIRES

Stauffer Chemical Company is enthusiastic about the success of their Boron Trichloride for controlling magnesium fires in heat-treating, pre-heating and annealing furnaces. At the present time, the method is recommended only for comparatively tight batch-type furnaces or ovens heated by electrical resistors or radiant tubes with forced circulation. The Boron Trichloride gas is fed into the furnace from a 50 pound cylinder through a pipe opening welded into the furnace door. Magnesium processors agree it is the best material which has been found for the purpose. For further information, write to Stauffer, 420 Lexington Ave., New York 17, New York.

WARFARIN DOOMS RATS

—There are as many rats as people in the United States today. Within 15 days, they could be an extinct species. The magical poison, of course, is warfarin—The odorless, tasteless anticoagulant which causes death by internal hemorrhage after repeated consumption over a period of days. Prentiss Drug & Chemical Co., Inc., 110 William St., N. Y.—which markets warfarin concentrates to manufacturers and repackers of rodenticides for compounding with bait and/or resale under their own brand names—has just published a comprehensive booklet on action, advantages and methods of application of this fabulous rat-killer. Copies are available on request.

SOLID ALKYLAMINES

—Amines are usually supplied as dilute aqueous solutions or as gases. Now Chemo Puro Mfg. Corp. has made available in tonnage quantities the Hydrochlorides of pure Mono and Dimethyl and Mono and Diethyl Amines. These are colorless crystalline salts of 99 plus % purity for which new uses are being sought—and found. Diethylamine HCl and Monomethylamine HCl are ingredients of high-quality special duty solders and fluxes because these salts yield hydrochloric acid without leaving any other residue, the amine being evaporated under the influence of heat. A request to Chemo Puro at 26-32 Skillman Ave., Long Island City, N. Y., will bring you a sample of the Amine Hydrochloride which may be the answer to your processing problem.

"WHAT'S NEW" is prepared by the staff of The House of J. Hayden Twiss as a cooperative service for its clients. The product developments and expansion programs reported here reflect the progressiveness of our clients whose advertising we strive to make technically informative, editorially interesting and psychologically persuasive. If further information is desired, please address your inquiry to "What's New" Editor, The House of J. Hayden Twiss, New York Central Building, 225 Park Avenue, New York 17, N. Y. ©

When inquiring check CP 9301 on handy form, pgs. 2-3

BARNSTEAD DEMINERALIZERS PROVIDE LOW-COST PURE WATER

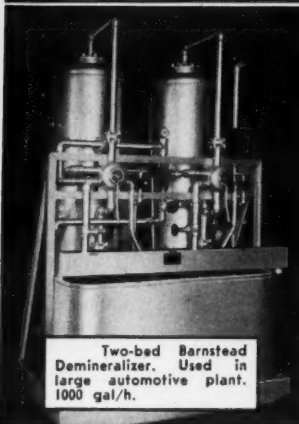
for • Electroplating • Anodizing
• Photographic Solutions
• Salt-free Rinse Water • Silvering
And Hundreds of Other Applications



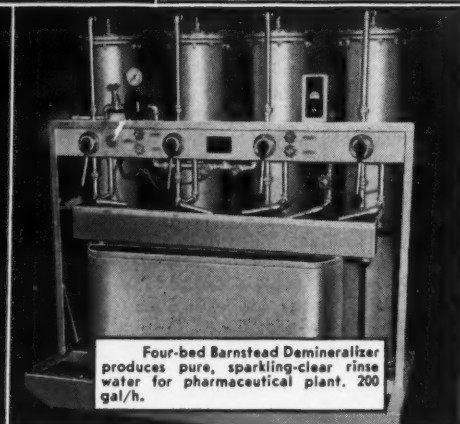
Four-bed Barnstead Demineralizer providing pure, high resistance water for electronic mfg. 1000 gal/h.



Barnstead Four-Bed Demineralizer provides pure water for hot seal tank in anodizing. 30 gal/h.



Two-bed Barnstead Demineralizer. Used in large automotive plant. 1000 gal/h.



Four-bed Barnstead Demineralizer produces pure, sparkling-clear rinse water for pharmaceutical plant. 200 gal/h.

Selection of the best size and type of demineralizer for your operation depends on the nature of your raw water supply, flow rate needed, daily demand, and degree of purity required. Send a sample of your water to our Laboratory and Barnstead Engineers will perform the necessary analysis without obligation.

PROMPT DELIVERIES

WRITE FOR FREE CATALOG

Barnstead
STILL & STERILIZER CO.

66 Lanesville Terrace, Forest Hills, Boston 31, Mass.

FOR THE LABORATORY

**Cadmium standard reference cell
used as integral circuit part
of precision pH meter . . .**

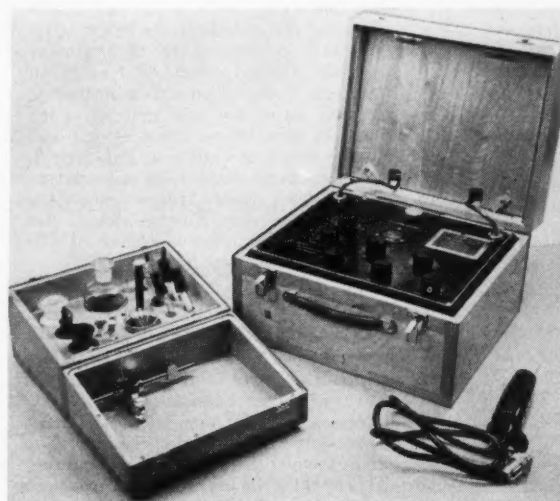
instrument operates from a 60 cps power line, using cathode ray tube as zero indicator

Uses: For precise pH, oxidation-reduction and potentiometric work.

Features: Accuracy is 0.01 pH unit or 0.5 mv with a full range of 14.15 pH units (or 0 to 1415 mv).

Description: Null-balance instrument uses glass, quinhydrone or hydrogen electrodes and is calibrated for these. It can also use platina electrodes. Calomel reference electrode is removable. Temperature and asymmetry controls are provided. No polarization problems arise since no current flows while the actual measurement is being made.

Instrument is built in two sections. The electrical section is enclosed in a wood cabinet $16\frac{3}{8} \times 13\frac{5}{8} \times 10''$



pH equipment furnished with reagent and meter cabinets

high. Transformer taps can be changed to power the instrument with 60 cps AC at 110, 125, 145, 200, 220 or 245 v. A small cathode ray tube is used as zero indicator in making measurements. Reference voltage is furnished by a standard cadmium reference cell.

Chemical cabinet, $11\frac{1}{2} \times 8\frac{5}{8} \times 7\frac{1}{2}''$ high, is also made of wood. It contains two glass electrodes, a saturated calomel electrode, a quinhydrone electrode, thermometer, reagents and necessary glassware. A mounting clamp for supporting electrode assembly is attached to cover.

(Designed and built by Research & Control Div., North American Philips Company, Inc., Dept. CP, 750 S. Fulton Ave., Mount Vernon, N. Y. . . . or for more information check CP 9303 on handy form, pages 2 & 3.)

**High resistance of meter
gives fine measurement
without amplification . . .**

voltmeter of 10^{14} ohms input resistance uses calibrated shunts for exact current measurements

Uses: Without shunts this is a 0 to 1, 0 to 2, and 0 to 20 v DC voltmeter. Shunts convert it into a very sensitive current meter. It is especially recommended for capacitor voltages, piezo-electric voltages, surface

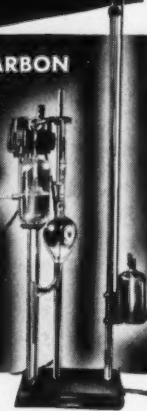
CARBON and SULFUR ANALYSIS

with

*Speed!
Ease!
Accuracy!*

TWO MINUTE CARBON DETERMINATOR

High degree of accuracy assured by: fan cooling gases, leveling to meniscus line, automatically maintaining atmospheric pressure, wide selection of carbon percentage scales. Accurate within 0.002% on low range Burette.



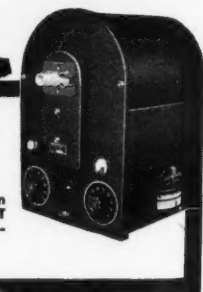
THREE MINUTE SULFUR DETERMINATOR

Determination in accordance with A.S.T.M. specification accuracy within 0.002% inorganic or organic materials. Simple procedure.



HIGH-TEMPERATURE FURNACE

Sturdy construction with HIGHEST QUALITY insulation.



Use 3031D Boats and Zircotubes to reduce operating cost of analysis.

Use Dietert-Detroit Carbon and Sulfur Determinators for Economical Analyses
Write to Dept. C-2 for descriptive literature

CONTROL EQUIPMENT
HARRY W. DIETERT COMPANY
9330 ROSELAWN • DETROIT 4, MICH.

When inquiring check CP 9304 on handy form, pgs. 2-3

CHEMICAL PROCESSING

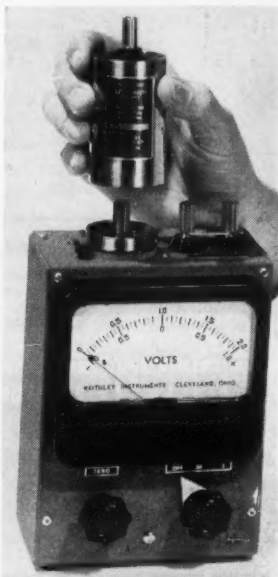
When inquiring check CP 9302 on handy form, pgs. 2-3

FOR THE LABORATORY

contact potentials, and charge distribution on insulation. With shunt it can measure insulation leakage, capacitor leakage and resistance, photo-electric cell current, and ion chamber current without any amplification of the signals.

Features: Input resistance is greater than 10^{14} ohms shunted with about $6 \mu\text{f}$.

Description: Model 200 Vacuum Tube Electrometer embodies degeneration and battery potential compensation in its single-tube circuit. With input terminal connected together, there is less than 0.002 volts drift per hour on the 2-volt range; less than 0.02 on the 20-volt range. Linearity and sensitivity errors are less than 2% of full scale reading.



Shunt clips on

Calibrated shunts, accurate to within 1% of nameplate rating, are now designated by manufacturer as Model 2001 shunts. Nominal values of standards range from one megohm to one million megohms, though lower and intermediate values can also be furnished. Shunts are connected by clipping to meter terminals (dust-protected banana plug). Use of the shunts make current measurements of from 10^{-6} to 10^{-13} amp feasible without amplification. Loading effect of the meter is not significant in most cases.

Housed in a $5\frac{1}{4} \times 7 \times 2\frac{3}{4}$ " gray wrinkle-finish cabinet, the meter has a 3.9" scale. Only controls are a range and on-off switch, zero adjust, and input switch. Power is furnished by these batteries: one flashlight cell (size D), seven penlight cells (size AA), and two type 411 15 v miniature B batteries. Battery life of D cells is 200 hr, other batteries last about 800 hr.

(Equipment designed and built by Keithley Instruments, Dept. CP, 3868 Carnegie Ave., Cleveland 15, Ohio . . . or for more information check CP 9305 on handy form, pages 2 and 3.)

Reviews available instruments by type and use

Touching on nearly 100 types of instruments and illustrating each, this 28-page catalog covers most of the industrial types available. Catalog is printed in two colors and is made up of separate entries. Each instrument type is pictured and very briefly described. In order to make the classification clear, table of contents lists instruments both by type (e.g., pyrometer, potentiometer, et al) and by use. Thirteen broad fields are chosen to represent the possible uses of the instruments shown.

Catalog is valuable both as an index of instruments and as a skeleton specification summary. Cat 5000 is issued by Industrial Div., Minneapolis-Honeywell Regulator Co., Dept. CP, Station 40, Wayne & Windrim Aves., Philadelphia 44, Pa. When inquiring specify CP 9306 on handy form, pages 2 and 3.

FEBRUARY, 1952



They unload 2000 tons an hour!

B & O giant unloaders first to use new G-E product



PUMPLESS RECTIFIERS

The new Baltimore and Ohio ore facility at Baltimore reduces turn-around time for ore boats and speeds strategic iron ore on its way to the nation's steel-producing centers.

Mercury Arc Rectifiers coupled with adjustable d-c drives are important factors in the highly efficient unloading cycle. Two 1000 kw G-E *pumpless* rectifiers supply the d-c power.

These new G-E *pumpless* rectifiers give continuous low-cost service because they incorporate the latest improvements in design. Vacuum pumps usually required for rectifiers of this great a capacity are eliminated. So are the pumping losses and the water formerly needed to cool the vacuum pumps. All parts are easily accessible for periodic inspection, and any tank can be replaced by a stand-by spare, if necessary.

For information about modern *pumpless*-rectifier conversion to fit your d-c power needs, call or write your nearest G-E sales representative. General Electric Co., Schenectady 5, New York.



G-E *pumpless* rectifiers give lower cost d-c power than conventional pumped rectifiers because vacuum pumping system is eliminated. This means no vacuum headers, indicators or connections and no condensation pump.

GENERAL ELECTRIC

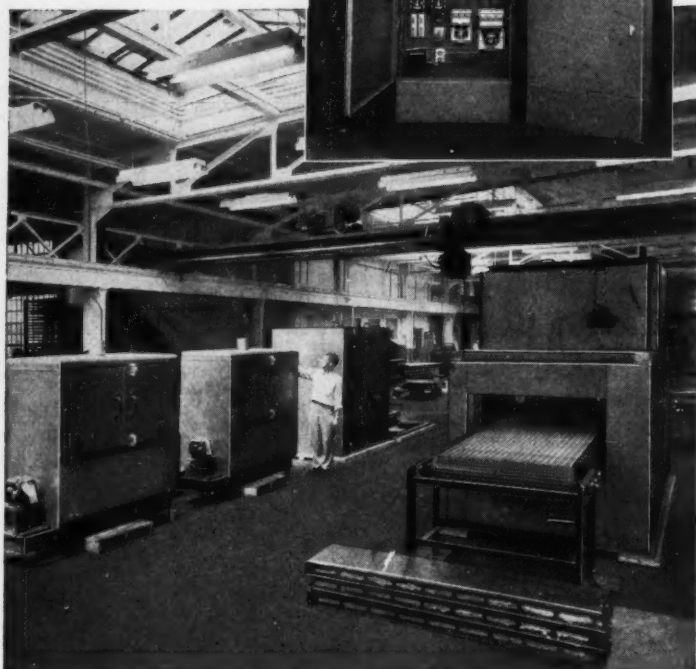
324-5

When inquiring check CP 9307 on handy form, pgs. 2-3

KIRK AND BLUM INDUSTRIAL OVENS

Ready To Go!

Typical Kirk & Blum
Oven Control



Many KIRK & BLUM Industrial Ovens, although designed and built to specifications, are shipped completely assembled and tested, ready to operate. Once "spotted" in your plant, they can be connected and in operation in a few hours, saving time and expense.

Illustrated above is a representative group recently shipped to well known industrial firms. From left to right: Two moisture evaporation ovens for chemical powders. Moisture removal oven for carbon electrodes. A conveyerized oven for drying insulating varnishes.

INDUSTRIAL OVENS • FAN SYSTEMS FOR VARIOUS INDUSTRIES

For information or literature on any of these KIRK & BLUM products write

KIRK AND BLUM

THE KIRK & BLUM MFG. CO.
3133 Forrer Street
Cincinnati 9, Ohio

When inquiring check CP 9308 on handy form, pgs. 2-3

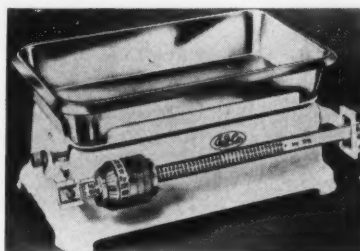
FOR THE LABORATORY

Micrometer reading of beam weight for speed . . .

weight slides to strike rough balance, then screws to final position

Uses: For rough laboratory weighing (gram accuracy) of difficult items. One example would be laboratory animals.

Features: Single beam weight of the balance gives good accuracy because its position can be read very closely on a micrometer-like thimble.



Capacities from 6 to 14 kilograms

Since both coarse and fine balance adjustments are made with the single weight, the balance is a time saver.

Description: This One-pan Beranger Type Balance is available in capacities from 6 to 14 kgm and is calibrated in kilograms and grams. Smallest balance is about 12.6 x 8.1 x 5.1" (32 x 21 x 13 cm); largest is about 15 x 10.2 x 5.5" (38 x 36 x 14 cm). For easy cleaning balance body is finished in white enamel while the pan is chrome plated. Pan is detachable and in the largest size balance, a flat plate may be substituted.

(Available through The Emil Greiner Company, Dept. CP, 20-26 N. Moore St., New York 13, N. Y. . . or for more information check CP 9309 on handy form, pages 2 and 3.)

Simple color check reveals thickness of film . . .

optical interference is a quick way of testing very thin film

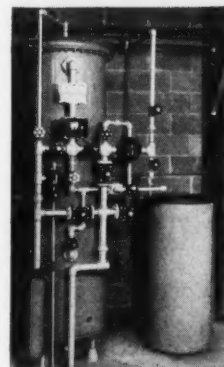
Uses: For checking very thin layers of deposited materials. Gage can also be used to demonstrate many laws of optics.

Features: Range of the gage is 2 to 16 microinches in steps of 1 microinch.

Description: Special glass sheet of the Step Gage is protected by a plastic shield. This sheet has carefully built layers of barium stearate. Laid down 0.1 microinch thick at each deposit, the barium soap has been brought to depths ranging from

ULTRA-DEIONIZER

Produces Highest Quality Mineral-Free Water



This remarkable single tank, mixed-bed ion exchange unit produces deionized water for less than 25 cents per 1000 gallons (based on 10 grain water).

FEATURES

- Replaces Distillation or Evaporation
 - at 1% to 10% of the cost
- Removes All Ionizable Impurities
 - including CO₂ and silica
- Up to 44% Greater Capacity
 - double-check design
- Requires Minimum Space
 - lower investment cost

Write for Bulletin 512

ZEOLITE WATER SOFTENERS

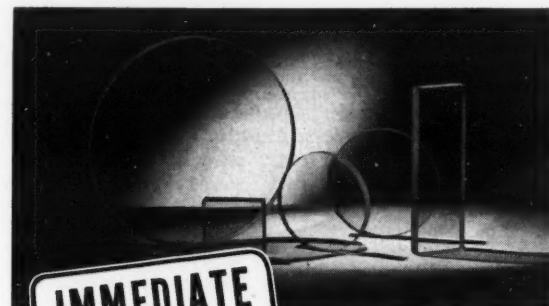
New Bulletin 611 describes "Double-Check" type water softener that delivers up to 44% more soft water. Also covers complete line of equipment and treatment for any water conditioning need. Write for your copy.

ELGIN

SOFTENER CORPORATION

180 North Grove Avenue, Elgin, Illinois
WATER CONDITIONING SINCE 1908

When inquiring check CP 9310 on handy form, pgs. 2-3



IMMEDIATE DELIVERY

on *Pyrex* Brand
HEAT RESISTANT
SIGHT GLASSES

Now, Swift offers fast delivery on SIGHT GLASSES, cut or ground in any shape from PYREX Brand Heat-Resistant Polished Plate Glass.

For use on ovens, absorption columns, evaporators, stills, pressure vessels, etc. Resists clouding, pitting, chemicals (except HF and strong, hot caustic solutions). Supplied in rounds, squares, rectangles, and odd shapes in 8 thicknesses (1/8" to 1") and any size up to 24" x 60".

Write, wire or phone for quotation — ask for SIGHT GLASS bulletin.

SWIFT LUBRICATOR CO., INC.

330 TENTH ST. SAN FRANCISCO 3 • ELMIRA, N. Y.
36 OLIVER ST., BOSTON 10

When inquiring check CP 9311 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Good Equipment...



—the tested, proven, accepted fast-acting detergent and wetting agent.

For less than 4 cents a gallon, all laboratory glassware, metalware, porcelain, silverware etc. can now be kept sparkling clean and film-free with a minimum of effort.

In addition, Alconox works with equal effectiveness in either hard or soft water, hot or cold — and is absolutely harmless to human tissue. . .



Available in

| | |
|----------------------------|-------|
| Box of 3 lb. price \$ 1.95 | |
| Carton (12 x 3 lb.) ea. | 18.00 |
| Bag of 50 lb. lb. | .40 |
| Barrel of 300 lb. lb. | .37 |

Try it — Buy it
— and You'll Buy it again.

If your dealer cannot supply you, write for literature and samples. Dept. CP2



When inquiring check CP 9312 on handy form, pgs. 2-3

A useful group of resins for many types of paint, anti-rust compounds, waterproofings, adhesives, rubber compounds, cements, floor tile and many other products.

Piccoumaron

Para-Coumarone-Indene RESINS

Piccoumaron Resins are soluble in coal tar, turpentine, terpene and most chlorinated solvents. Colors vary from pale yellow to deep reddish brown. Good resistance to acids, alkalies and salt. Available in grades from liquids to brittle solids.

Write for samples and complete data on PICCOUMARON Resins.

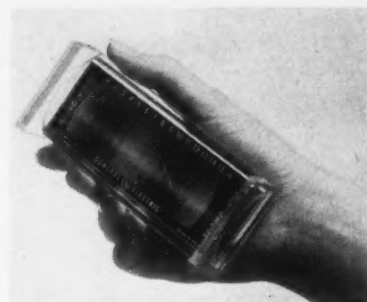
PENNSYLVANIA
INDUSTRIAL CHEMICAL CORP.
CLAIRTON, PA.

Plants at: Clairton, Pa., West Elizabeth, Pa., and Chester, Pa.



Distributed by Pennsylvania Falk Chemical Co., Pittsburgh 30, Pa. and Harwick Standard Chemical Co., Akron 5, Ohio

FOR THE LABORATORY



Color of bands allows visual comparison to find film of indicated thickness

2 to 16 microinches. Each band in the gage represents a one microinch thickness increase over adjacent band.

When a film to be measured has refractive index less than that of the material upon which it is deposited the simple measurement consists in looking at white light through the deposited film and comparing the color to those of the gage. With a correction for the refractive index of the material tested, color match indicates the thickness shown by the gage. When testing a film having an index higher than glass, a somewhat modified method is used.

As well as use in checking sputtering, evaporation, etc., the gage can be used indirectly for checking temper color and vapor pressure.

(Developed by Special Products Div., General Electric Company, Dept. CP, Schenectady 5, N. Y. . . or for more information check CP 9314 on handy form, pages 2 and 3.)

Offers Reinecke salt for separating amino acids, water-soluble bases . . .

by the formation of Reineckates

Uses: Effective reagent for the separation of amino acids and high-molecular-weight, water-soluble bases as Reineckates. Precipitation of histidine and carnosine, precipitation and identification of organic bases, and the preparation of diacetoneamine and triacetoneamine can be accomplished.

Description: Reinecke Salt (ammonium tetrathiocyanate-diamino chromite is prepared from the reaction of ammonium dichromate and ammonium thiocyanate. Details on formation of Reineckates is carried in maker's Bul R-220A.

(Product of the Jasonols Chemical Corporation, Dept. CP, 1085 Myrtle Ave., Brooklyn 6, N.Y. . . or for more information check CP 9315 on handy form, pages 2 and 3.)

VACUUM PROTECTION for your VOLUME PRODUCTION



READ STANDARD
CORPORATION

Readco Spiral Ribbon Vacuum Mixers enable you to avoid undesirable oxidation . . . to recover solvents and evaporate moisture from large batches without the excessive, detrimental temperatures necessary under atmospheric conditions.

The single packing gland construction of Readco Vacuum Spiral Ribbon Mixers necessitates sealing against vacuum only where the drive shaft enters the vacuum chamber. Lubricant cannot possibly enter the mixing chamber.

No pressure differential exists across the quickly removable split seals.

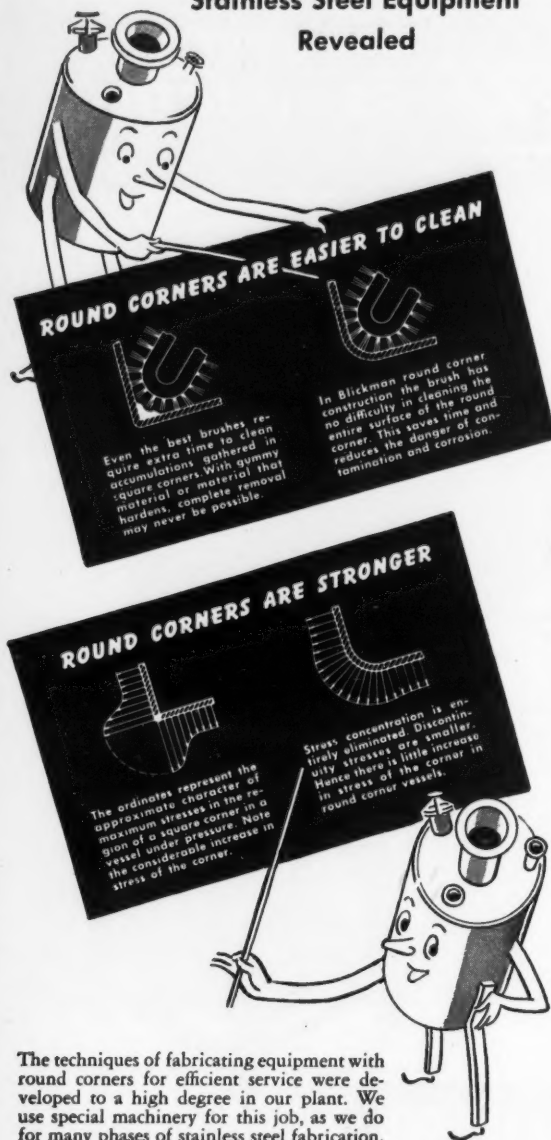
A quickly opened, flush-plug discharge gate prevents accumulation of dead volume. Single or divided jackets provide a wide range of temperature control. Bakery-Chemical Division, YORK, PENNSYLVANIA, LOS ANGELES, CALIFORNIA.

When inquiring check CP 9316 on handy form, pgs. 2-3

When inquiring check CP 9313 on handy form, pgs. 2-3

WHY THEY BUILT ME WITH ROUND CORNERS

Advantages For Your
Stainless Steel Equipment
Revealed



The techniques of fabricating equipment with round corners for efficient service were developed to a high degree in our plant. We use special machinery for this job, as we do for many phases of stainless steel fabrication.

FOR BETTER STAINLESS STEEL EQUIPMENT,
CONSULT WITH US.

S. BLICKMAN, INC., 702 GREGORY AVE., WEEHAWKEN, N.J.

S. BLICKMAN, INC.
Guards Alloys in Fabrication

CORROSION RESISTANT PROCESSING EQUIPMENT



When inquiring check CP 9317 on handy form, pgs. 2-3

New Literature

Covers tetra- and higher-isocyclics from 1937 to 1946

A total of 1082 pages comprise this supplement to publisher's volume 14 on tetra-cyclic and higher-cyclic compounds. It covers the literature from 1937 to 1946 and runs in continuity with the original volume. Because of the large amount of material involved, the topics of this work exclude steroids and triterpenes which will be treated in a second part of the supplement.

Most ring systems are introduced by a detailed schematic survey of the various methods of formation of the nucleus concerned. Next, the occurrence in nature and in technical products (coal tar, lignite tar, etc.) is dealt with. And finally syntheses from systems with fewer carbon atoms, formation by rearrangement of systems with an equal number of carbon atoms, and formation by degradation from more complicated systems.

To obtain "Elsevier's Encyclopedia of Organic Chemistry, Supplement to Volume XIV," remit \$88 direct to The Elsevier Press, Dept. CP, 402 Lovett Blvd., Houston, Texas. When inquiring specify CP 9318 on handy form, pages 2 and 3.

Catalog includes selection tables for adjustable port valves

Printed in two colors, this 12-page catalog covers the use of manufacturer's pneumatic diaphragm motors with North American Adjustable Port Valves. Specifications and selection data are given for the valves with gas, oil, air, steam, and water regulation. Data also includes mounting dimensions and materials of construction notes.

Cat 1800 is issued by Brown Instruments Div., Minneapolis-Honeywell Regulator Company, Dept. CP, Station 40, Wayne & Windrim Aves., Philadelphia 44, Pa. When inquiring specify CP 9319 on handy form, pages 2 and 3.

Notes improvements made on laboratory press

Full details are presented in 24-page catalog on a press which has myriad uses in the laboratory. Among applications cited are: plastic molding, forming, blocking; flow tests; vulcanizing; crushing tests; pressing liquor from pulp; splitting of oils, stearins and waxes; and fatty acid determinations. Press is hydraulically operated and is entirely self contained — hand pump and oil storage for ram being incorporated in it. Illustrated are the manufacturer's standard 10-ton model with various accessories and the 20-ton model.

Among improvements and refinements noted in this publication and not before cataloged are: lengthened pump lever — for easier pumping; plastic impregnated packings on pump plunger and main ram; porous metal pressure snubber — to protect gage tube from shock; heavier pump link, lever and pins — for longer wear; and larger oil passages and valves. Cat L-4 is issued by Fred S. Carver Inc., Dept. CP, One Chatham Rd., Summit, N.J. When inquiring specify CP 9320 on handy form, pages 2 and 3.

Data and selection tables on cooling coils

Developments in extended surface cooling coils, for use with direct expansion refrigerants and chilled water in air conditioning or process applications, are summarized in revised 72-page bulletin. Special consideration is given to coils designed for such industrial applications as gas cooling, butane vaporizing, transformer oil cooling, and condensing of gaseous refrigerants.

More than 50 pages of the publication are devoted to performance data tables, information on selection, specifications and other details intended to aid the engineer select the proper design for any specific air conditioning, industrial or process application. Bul DS-365 is issued by The Trane Co., Dept. CP, La Crosse, Wis. When inquiring specify CP 9321 on handy form, pages 2 and 3.

Remote control via use of cable explained

Attractive, two-color, 12-page bulletin presents a description of transferring push and/or pull movements from one location or mechanism to another by means of cable. Pointed out as an advantage is the cable's flexibility which makes possible the transmission of motion between points where one or both anchorages may be changing their relative positions. Also, the flexible construction damps the noise and vibration that would be transmitted by a solid construction.

Controls are available in five sizes (diameter of inner operating member indicated here): 3/32, 1/8, 3/16, 1/4, and 5/16". Outer covering may be of high carbon steel or rubber for extra protection against water or abrasive action. As far as inner working member and conduit are concerned, the control is lubricated for life by compounds which can be effectively used from about -70°F to extremely high temperatures.

Range of application, with respect to distance, is indicated by the statement that units are working satisfactorily at 150'. "The Key to Remote Control" is issued by American Chain & Cable Co., Inc., Dept. CP, 601 Stephenson Bldg., Detroit 2, Mich. When inquiring specify CP 9322 on handy form, pages 2 and 3.

Piping monograph is valuable source of design information

This 8 3/4 x 11 1/4" book is a collection of data and technical information about piping. The aim of the authors was to bring the material from many sources into one volume. In addition to this they have added considerable material never before published.

Literally hundreds of tables and diagrams are used to simplify finding the factors and data necessary for all sorts of piping work. The work briefly treats code requirements before getting into design factors. First consideration among these is the problem of expansion and stresses. Principles of design are supplemented by extensive tables

of properties. More supplementary data is given under the three headings: Tables of Common Shapes, Expansion Bends, and Line Inertias.

Velocity, pressure drop, and heat transfer are dealt with next — text again giving many useful quick reference tables. Then, in a more detailed treatment of code requirements, pressure-temperature graphs indicate allowable designs for various pipe materials. This section is logically followed with a short review of metallurgy which leads into a discussion of piping materials. As before, this section is packed with working data, including strength data, analysis reports, and lists of recommended material for gaskets and pipe when handling any of approximately 200 corrosive materials in various concentrations and at various temperatures.

Later sections of the book deal with pipe fabrication, pipe hangers and supports, and 41 pages of general tables are given. Following page 221 is a selective two-page bibliography. A separate 11-page advertising section pictures and explains many of the steps in testing and fabricating manufacturer's pipe and fittings.

To obtain this excellent and practical book, "Piping Design and Engineering," remit \$10 direct to Grinnell Company, Dept. CP, Providence 1, R.I. When inquiring specify CP 9323 on handy form, pages 2 and 3.

Thermocouple glands are for bare wires

Four-page, illustrated bulletin spotlights thermocouple glands designed for use with bare wires entering pressure or vacuum chambers. The Type 303 stainless steel (standard) glands are suitable for temperatures to 1500°F. A sectional drawing explains principle of sealing the gland, using powdered talc. Useful thermocouple wire-working table lists diameter, circular-mil area, and weight of wire per unit length for B & S gage numbers 1 through 40.

Bul 951 is issued by Conax Corporation, Dept. CP, 4515 Main St., Buffalo 21, N. Y. When inquiring specify CP 9324 on handy form, pages 2 and 3.

Corrosives-handling pumps from 20 to 1300 gpm

Construction features of process pumps for handling corrosive and abrasive liquors are described in six-page bulletin. Included is an exploded view of pump to demonstrate ready accessibility of parts. Also shown are cross sections of each of three stuffing box arrangements — sleeve type, conventional stuffing box and mechanical seal. The first named type is stated to eliminate leakage completely and keep abrasives out of the stuffing box.

Pumps are available in five sizes to provide a capacity range from 20 to 1300 gpm at heads up to 260 feet. They are provided with large bearings and heavy-duty shaft to permit direct or V-belt drive. Bul C8B6615B is issued by Allis-Chalmers Manufacturing Co., 1151 S. 70th St., Milwaukee, Wis. When inquiring specify CP 9325 on handy form, pages 2 and 3.

Liquid filling machines — vacuum or gravity

Straightline, semi-automatic liquid filling equipment is the topic of 12-page catalog. Four basic types, operating on either vacuum or gravity principle, are described and their dimensions tabulated. Cat P-15 is issued by Packer Machinery Corp., Dept. CP, 30 Irving Pl., New York 13, N. Y. When inquiring specify CP 9326 on handy form, pages 2 and 3.

FEBRUARY, 1952

ARE YOU GETTING THESE ADVANTAGES FROM YOUR BRONZE VALVES?









STEMALLOY
This amazing silicon bronze alloy, an exclusive Lunkenheimer development, eliminates stem-thread failure, has actually been tested at 300,000 openings and closings!

REPACKING SEATS
You can repack while the valve is wide open and under pressure. Perfectly machined backseating surfaces are located above stem threads where scale does not collect.

STAY-ON DISCS
Double-wedge disc sections are pressed against bonnet when valve is fully opened, won't fall out when bonnet assembly is removed.

HEXAGON HEAD GLAND
Six faces are provided for secure wrench grip to loosen and raise gland. No more troublesome prying, as with old-fashioned round type.

INTERCHANGEABILITY
Choose a rising or non-rising stem; double-wedge, solid wedge, or single-wedge disc. Switch trim for any service, and provide new parts as you need them. With these valves in stock, you keep inventories low — yet never have shortages.

WRITE FOR
"Lunkenheimer Copper Base Alloys," a useful book which explains valve metals, helps you choose the right valves for specific jobs. Ask your distributor, or write The Lunkenheimer Co., Box 360Q, Cincinnati 14, Ohio.



BRONZE • STEEL • IRON

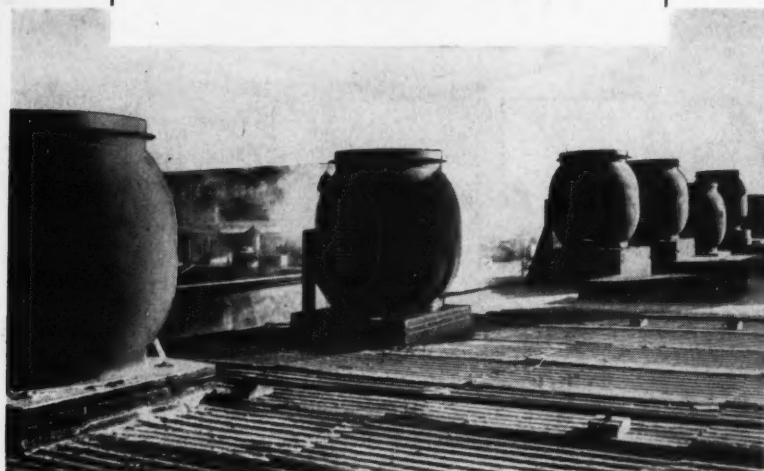
LUNKENHEIMER

Great

THE ONE NAME IN VALVES

When inquiring check CP 9327 on handy form, pgs. 2-3

HOT FUMES OR SMOG



it's all the same to HAVEG!

The Haveg housings of these 10 DeBothezat Bifurcator fans withstand hot corrosive fumes from cleaning and pickling and are unaffected by weather.

That is because Haveg—a structural plastic—is not affected by chemical corrosion nor atmospheric erosion. Scratches, gouges and abrasions do not affect the service of Haveg equipment because it is corrosion resistant through and through.

In your plans for handling or processing corrosive acids, alkalies or solvents, be sure to check the advantages Haveg offers.

Write for Bulletin F-6.



HAVEG CORPORATION

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|---------------------------------------------------|------------------------------------------------|--------------------------------------------------|----------------------------------------------------|---------------------------------------------------|-------------------------------------------------|----------------------------------------|



When inquiring check CP 9328 on handy form, pgs. 2-3

NEW LITERATURE

Brief catalog on fuses, clamps and oilers

Folding type catalog is a handy guide to manufacturer's electrical and lubricating products. Fuses, fuse pullers, clamps for fuse clips, and test clamps are briefly described, as a reference is made with each product to more detailed literature.

Various types of automatic oilers are illustrated and discussed: wick feed, gravity feed, underfeed, and thermal. Folder Series F.L.B. 300-C is issued by Trico Fuse Mfg. Co., Dept. CP, 2948 N. 5th St., Milwaukee 12, Wis. When inquiring specify CP 9329 on handy form, pages 2 and 3.

Tells measuring methods for humidity

Circular answers comprehensively a large number of questions on humidity measurement; reviews methods for measuring water-vapor content of air, other gases, and for producing and controlling atmospheres of known humidity for hygrometer testing and calibration or for general research.

Within its 18 pages it discusses such hygrometric techniques as psychrometry, mechanical hygrometry, dewpoint measurement, electric hygrometry, thermal conductivity, index of refraction, pressure and volume measurements, and dielectric constant.

In addition, circular — "Methods of Measuring Humidity and Testing Hygrometers," —describes suitable equipment for establishing desired humidities over a wide range of temperature. A list of 157 selected references pertaining to hygrometry is included.

To obtain National Bureau of Standards Circular 512 remit 15c direct to US Dept. of Commerce, Washington 25, DC.

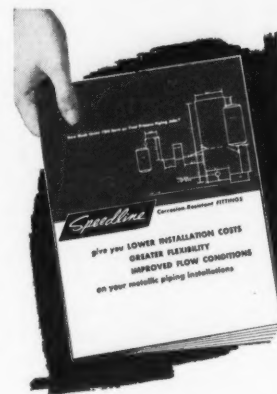
Charts specs of over 100 welding alloys

Booklet contains photographs, data and technical information on series of low temperature welding alloys for use on cast iron, steel, alloy steels, copper, brass, bronze, aluminum, magnesium and for cutting all metals.

Of its 16 pages, two are devoted to a full chart of over 100 of manufacturer's welding alloys — showing their main uses, bonding temperatures and tensile strength. "1952 Directory" is issued by Eutectic Welding Alloys Corp., Dept. CP, 40-40 172nd St., Flushing, New York, N.Y. When inquiring specify CP 9330 on handy form, pages 2 and 3.

NEW Corrosion-Resistant

Speedline fittings



LOWER PIPING COSTS result when you use *Speedline* fittings, because you can use lightweight Schedule 5 pipe. Increased ID of Schedule 5 pipe gives lines increased capacity.

RAPID INSTALLATION is possible because the *Speedline* method often eliminates the need for welding or flaring.

Write for your copy of this 20-page *Speedline* catalog. It gives you the entire story.

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Baltimore Branch Warehouse, 2835 Sisson Street

When inquiring check CP 9331 on handy form, pgs. 2-3



FREE! YOUR GUIDE TO BETTER MAINTENANCE PAINTING!

Now you can be SURE of the right paint for each use! Our *Industrial Paint Index* helps you avoid costly errors. Shows how to select the *right* paint for every maintenance need, what to use on different surfaces, indoors or out. Get this convenient, quick-reference guide—send for it NOW!

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1128-1300 W. 70TH ST., CLEVELAND 2, OHIO

When inquiring check CP 9332 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Informative guide hits all angles of filter press application

All aspects of manufacturer's filter press are covered in 32-page booklet. After a page of discussion concerning basic construction and operation, the literature goes on to factors in selection, comparison of filter plate types, washing of cake, materials of construction, closing devices, methods of supplying material to the press, filter media, and filter aids. A section is devoted to methods of determining filter press requirements. Graphs are included to aid in finding approximate cost of presses made of various materials.

A full page of specific materials now being handled by these presses is presented. Some typical-installation photographs are shown. Two pages are devoted to a cartridge type pressure-leaf filter. Complete index is included in booklet. Cat 52 is issued by T. Shriver & Company, Inc., Dept. CP, 810 Hamilton St., Harrison, N. J. When inquiring specify CP 9333 on handy form, pages 2 and 3.

Explains service for control of odors and fumes

Four-page brochure leads off with a listing of six prime requisites for a well-functioning odor and fume control system, then steps into discussion of features of this company's decontamination systems. Text reports that exhausts at any temperature can be decontaminated; all degrees of moisture, from superheated steam to dry gases, can be handled; valuable contaminants can be recovered. Partial list of typical applications is included.

"Odors and Fumes," issued by Microchemical Research Institute, Dept. CP, 44-27 Douglaston Parkway, Douglaston, N. Y. When inquiring specify CP 9334 on handy form, pages 2 and 3.

Gives prop's and reactions of unsaturated alcohol

Subject of technical bulletin is "Nopol", manufacturer's high boiling unsaturated alcohol, which has found use as a raw material in the production of wetting agents and resins. It is produced by the condensation of formaldehyde and beta pinene, a major constituent of turpentine. At atmospheric pressure, this alcohol boils at about 230°C. It is insoluble in water but soluble in common organic solvents in all proportions.

Bulletin lists not only the properties of the compound but, in addition, gives in detail the experiments in which its possibilities have been studied. "Nopol—Its Properties, Reactions and Derivatives" is issued by E. W. Colledge, GSA, Inc., Dept. CP, Jacksonville, Fla. When inquiring specify CP 9335 on handy form, pages 2 and 3.

Reveals materials, processes for making dye intermediates

"Manufacture of Intermediates and Dyes" is a "how-to-do" book that discusses the methods and materials used in the manufacture of dye intermediates — benzene, naphthalene, and anthracene series. It explains why certain raw materials and processes are preferable to others. Plant equipment used and important test methods with formulas for calculating results are covered.

Containing 177 pages, book is available by remitting \$4.50 direct to The Chemical Publishing Co., Inc., Dept. CP, 212 Fifth Ave., New York 10, N.Y. When inquiring specify CP 9336 on handy form, pages 2 and 3.

SWENSON chose NICKEL...

Solid caustic soda produced continuously in Nickel equipment made by Swenson

A recently developed Swenson evaporator produces solid caustic soda in a single pass, using 50% or 72% chlorate-free feed liquor.

Heating is by Dowtherm vapor. The equipment is compact and low in cost. Results already obtained suggest savings up to \$2.50 per ton of NaOH.

To keep metallic pick-up at a negligible minimum, all contact surfaces in the new Swenson evaporator are Nickel.

Its excellent resistance to the highly corrosive hot alkali and ease of fabrication have made Nickel the *standard* metal for handling high purity caustic soda. You will find it used successfully the world over in storage and transportation equipment, pumps, filters, evaporators, and processing tanks.

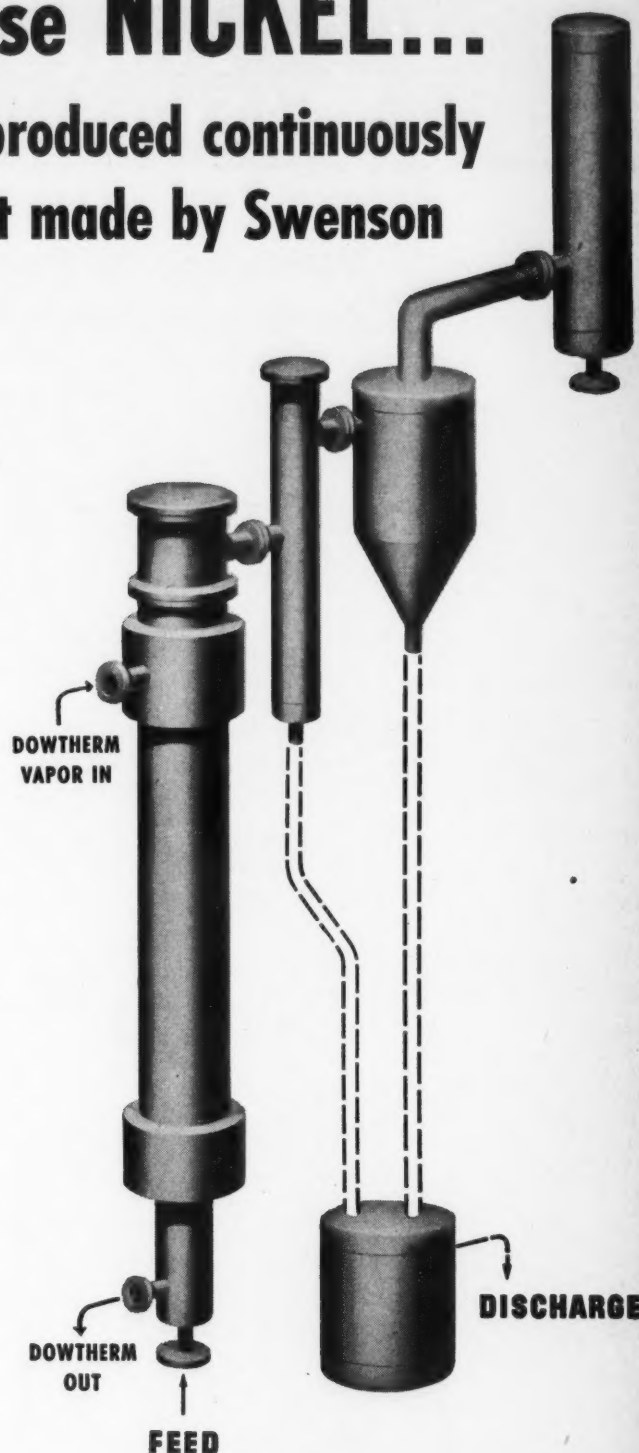
If you are contemplating new installations, remember that our Corrosion Engineering Service is always ready to make recommendations on metal selection and corrosion problems.

Right now, of course, much of Inco's production is on extended delivery because of defense needs. Therefore, it's wise to place your orders with necessary N.P.A. ratings, well in advance of your anticipated production schedule in order to improve your chances of getting delivery when you need it. And remember to call on INCO Corrosion Engineers for help with your corrosion problems — both for present operations and for future projects.

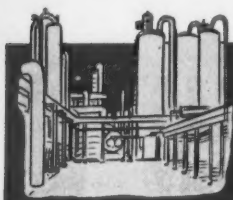


THE INTERNATIONAL NICKEL COMPANY, INC.

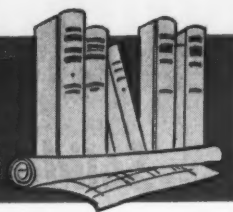
67 Wall Street, New York 5, N. Y.



USE PURE
Nickel
WHERE PURITY COUNTS



Processing and Engineering Data



Nomograph for Percentage by Weight of Ammonium Sulfate in Aqueous Solutions

By H. A. G. Chermin
Staatsmijnen in Limburg
Geleen, Netherlands

Edited by D. S. DAVIS
Professor of Chemical Engineering
Virginia Polytechnic Institute

THE percentage by weight of ammonium sulfate in solutions can be estimated by means of the accompanying line co-ordinate chart prepared from specific gravity data given in Gmelin¹ by a method described by Lo-Ho².

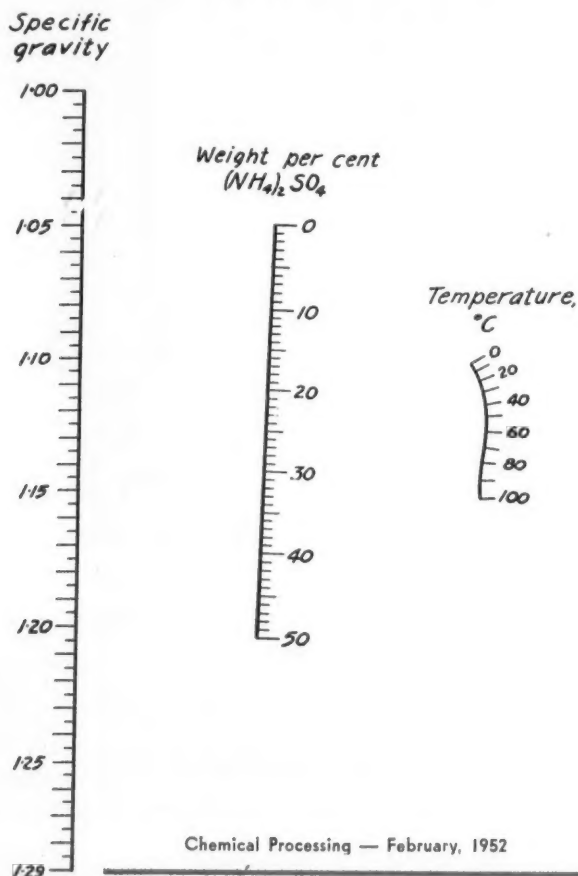
The use of the chart is illustrated by the following example. What is the percentage by weight of am-

monium sulfate of an ammonium sulfate solution at 40°C when the specific gravity of the solution is 1.050?

To find the answer, connect 1.050 on the specific gravity scale with 40 on the temperature scale and read the intersection at 10% on the weight % scale.

Literature Cited

- 1) Gmelin, *Handbuch der Anorganischen Chemie*, System No. 23 — Ammonia, 269.
- 2) Lo-Ho, *Journal of the Franklin Institute*, March 1948, 227-244.



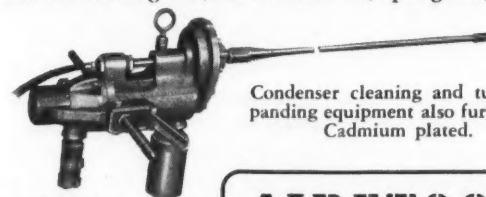
Chemical Processing — February, 1952



TUBE CLEANING EQUIPMENT THAT'S ACID-RESISTANT by AIRETOOL

Here's important news for chemical plants whose tubes and pipes handle acids which corrode tube cleaning equipment. AIRETOOL will, now, provide Cadmium plated tube cleaners, including motors, which will resist corrosion due to acid conditions encountered when cleaning tubes.

This development offers an important saving in adding life and usefulness to tube cleaning equipment at very little cost. For full particulars, write immediately to The AIRETOOL Mfg. Co., 331 S. Center St., Springfield, Ohio.



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There's an AIRETOOL Tube Cleaner and Tube Expander for every type of tubular construction

When inquiring check CP 9338 on handy form, pgs. 2-3

CHEMICAL PROCESSING

NEW LITERATURE

Describes recorders, controllers

Application of strip chart recorders, controllers and combustion safeguards used by a manufacturer in an aluminum foundry is covered in this four-page publication.

Explanation of the quality control plan used in such operations as heat treating, molding, and die casting of aluminum and magnesium, along with laboratory and machine shop functions is given. A second article explains use of strip chart recorders on two paint-drying ovens in manufacture of household appliances.

Also included in the publication is a column featuring examples of unusual adaptations of the control equipment in industry. "Wheelco Comments" (Vol 11, No. 2) may be obtained from Wheelco Instruments Company, Dept. CP, 847 W. Harrison St., Chicago 7, Ill. When inquiring specify CP 9339 on handy form, pages 2 and 3.

Treats of aliphatics in Vol I of organic treatise

Although drawing upon Richter's "Organic Chemistry" for its method of classification and presentation, this first volume of a series of five brings to the reader a more up-to-date account in that new subject matter has been incorporated with the old to form a composite picture. In its 777-page treatment of the aliphatic hydrocarbons, the book presents an admixture of both fact and theory — with the latter more evident in introductory material.

Here, there are discourses on the following subjects (as related to carbon compounds): crystallography, light absorption, stereochemistry, reaction mechanisms, free radicals and homolytic reactions, and the modern acid-base theory.

Following the introduction, eleven chapters treat in turn: alkanes; alkenes; halogen derivatives; monohydroxy alcohols — their ethers and esters; sulfur derivatives of the alcohol radicals; nitrogen derivatives; metal and metalloid compounds of alkyl radicals; aldehydes and ketones; monobasic carboxylic acids; dihydroxy alcohols and related compounds; and hydroxyaldehydes, hydroxyketones, and dicarbonyl compounds.

References to original literature are necessarily selective, and as a result, attention is frequently called to review articles and summaries containing more complete surveys of a subject. To obtain "Chemistry of Carbon Compounds, Vol. I", remit \$18 (subscription price; list 15% higher) to The Elsevier Press, Dept. CP, 402 Lovett Blvd., Houston, Texas. When inquiring specify CP 9340 on handy form, pages 2 and 3.

Catalog gives quick info on industrial trucks

Essential information on the company's industrial truck models and attachments is contained in the easy-to-read cross-reference charts of this eight-page, two-color, illustrated catalog. Specifications are shown page-by-page of models and capacities of both gas and electric fork-lift trucks with cushion-type tires or pneumatic tires.

Another time saving feature of the catalog is an attachments-and-devices cross-reference page which quickly shows all attachments and devices, and to which models they have been adapted. "Materials Handling Equipment" is issued by Industrial Truck Div., Clark Equipment Co., Dept. CP, Battle Creek, Mich. When inquiring specify CP 9341 on handy form, pages 2 and 3.

There's No Other Welding Tee Like This!



FLOWLINE

TRADE MARK
STAINLESS STEEL, MONEL, NICKEL and INCONEL WELDING FITTINGS
Preferred for Dependable Corrosion Service

The Welding Fittings organization — recognizing the superiority of welded piping for corrosion service — was the first to standardize, manufacture, and stock a complete line of stainless steel welding fittings.

The tee shown above — typical of all FLOWLINE Welding Fittings — provides unique features that have been developed through long, intensive specialization in design and production of welding fittings for corrosion service.

FLOWLINE fittings — tees, ells, reducers, stub ends, and caps — are available in sizes $\frac{1}{2}$ " through 12", and in various pipe schedules.

WELDING FITTINGS CORP.

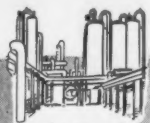
NEW CASTLE, PENNSYLVANIA

World's Largest Manufacturer of Stainless Welding Fittings

Features of FLOWLINE Tees

- Cold formed — seamless — by the exclusive Welding Fittings process.
- Reinforced crotch — tee is stronger than pipe with which it is used.
- Full center to face dimensions.
- Smooth interior walls.
- Ends machine tool cut and finished.
- Annealed, cleaned bright, passivated.
- Heat number permanently stamped on each tee as record of actual analysis and physical properties.
- Every tee is marked with type of metal, size, schedule, wall thickness, and FLOWLINE trade mark.

When inquiring check CP 9342 on handy form, pgs. 2-3



Processing and Engineering Data



Densities of Typical Solid Materials as They Occur in Material Handling and Processing Operations

Data Courtesy The Jeffrey Mfg. Co.

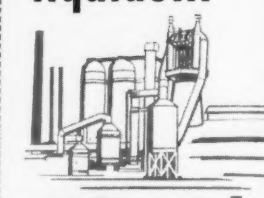
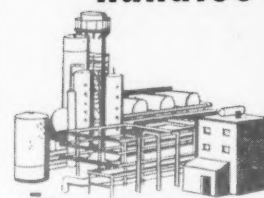
| Material | Densities in pounds per cu. ft. | Material | Densities in pounds per cu. ft. |
|------------------------------------|---------------------------------|----------------------------------------|---------------------------------|
| Ashes, dry, loose | 38 | Gypsum, ground, loose | 50-56 |
| Ashes, wet, loose | 47 | Iron, (cast) borings, fine | 120-155 |
| Baking Powder | 56 | Iron Ore, loose | 125-150 |
| Bone, ground, dry | 75 | Lime, hydrated, -200 mesh | 20-25 |
| Borax | 105-110 | Lime, quick, lump, 1 1/2" x 0" | 70-80 |
| Calcium Carbide, crushed | | Lime, quick, lump, 1/2" x 0" | 70 |
| 3 1/2" x 2", loose | 77 | Lime, quick, ground | 60-65 |
| 2" x 1/2", loose | 75 | Lime, quick, from oyster shells, loose | 45-50 |
| 1/2" x 1/4", loose | 80 | Limestone, broken, in loose piles | 95 |
| 1/4" x 0", loose | 82 | Limestone, sizes 3" x 2", loose | 95 |
| Carbon, Activated, very fine, dry | 8-20 | Limestone, sized, 2" x 1/2", loose | 92 |
| Cement, Portland, loose | 94 | Limestone, sized, 1/2" x 0", loose | 96 |
| Cement, Portland, clinker | 95 | Limestone, ground, -50 mesh, loose | 84 |
| Charcoal, broken, all sizes | 15-30 | Limestone, ground, -200 mesh, loose | 65 |
| Charcoal, broken, 1 1/2" x 0" | 14 | Marble, crushed | 95 |
| Charcoal, ground | 10 | Oyster Shells, piled | 60 |
| Chips, wood | 18 | Phosphate Rock, broken, in loose piles | 75-85 |
| Cinders, blast furnace | 57 | Phosphate Rock, pebble | 90-100 |
| Cinders, coal, ashes and clinker | 40 | Quartz, broken, in loose piles | 94 |
| Clay, dry in lumps, loose | 63 | Rubber, shredded scrap | 46 |
| Coal, Anthracite, broken, loose | 55-60 | Salt, coarse | 45-52 |
| Coal, Bituminous, broken, loose | 50-54 | Salt, fine | 42-50 |
| Coal, Bituminous, 5" x 0", dry | 54 | Salt, table | 42-45 |
| Coal, Bituminous, 1/2" x 0", dry | 45 | Salt, Rock, broken, in loose piles | 50 |
| Coal, Bituminous, 1/4" x 0", dry | 43 | Salt Cake, coarse | 55-60 |
| Coke, lump, average | 28-32 | Salt Cake, fine | 45-50 |
| Coke, breeze | 30-34 | Sand, dry, loose | 90-95 |
| Coke, petroleum, lump | 40-50 | Sand, wet, loose | 105-110 |
| Cork, solid | 15 | Sand and Gravel, dry | 90-105 |
| Cork, in bales | 8-9 | Sand and Gravel, wet | 105-125 |
| Cork, ground, 10" mesh x 0" | 4-5 | Sand, molding, prepared and loose | 77-80 |
| Cullet, glass, average | 85-100 | Sand, molding, rammed | 90-100 |
| Cullet, glass, 1/4" x 0" | 80-90 | Sand, molding, shaken out or new | 100 |
| Dolomite, crushed, 2" x 1/2" | 94 | Standstone, broken, in loose piles | 82-86 |
| Dolomite, crushed, 1/2" x 0" | 98 | Sawdust, dry | 7-12 |
| Earth, common loam, dry, loose | 76 | Scale, rolling mill | 105 |
| Earth, common loam, moist, loose | 73 | Shale, crushed, in loose piles | 92 |
| Feldspar, broken, in loose piles | 90-100 | Slag, bank, crushed | 80 |
| Fluorspar, broken, in loose piles | 110-125 | Slag, furnace, granulated | 60 |
| Fluorspar, ground, 100 mesh x 0" | 90-100 | Soda Ash, dense | 60-62 |
| Flint, pebbles | 105 | Soda Ash, light | 28-32 |
| Fullers Earth, dry | 30-35 | Soda, Bicarbonate, loose | 50-58 |
| Glass Batch | 90-110 | Starch, granular | 22-25 |
| Gneiss, broken, in loose piles | 96 | Stone, crushed, 1" x 0" | 85-105 |
| Granite, broken, in loose piles | 96 | Sugar, granulated, loose | 42-50 |
| Granite, crushed, 1 1/4" x 10 mesh | 98 | Sugar, brown | 45-55 |
| Gravel, mixed sizes, loose | 96-100 | Sulphur, ground, -100 mesh | 75-85 |
| Gravel, 2" x 1/4", loose | 105-110 | Sulphur, ground, -200 mesh | 50-55 |
| Gravel, 3/4" x 1/8", loose | 98-100 | Trap rock, broken, in loose piles | 107 |
| Greenstone, broken, in loose piles | 107 | Trap rock, crushed | 95-105 |
| Gypsum, broken, in loose piles | 90-94 | | |
| Gypsum, crushed, 1" x 0", loose | 90 | | |

The above table has been compiled from several sources, including data from the Jeffrey Testing Laboratory. The figures have been carefully checked and apply to average conditions. It is to be expected however, that the densities of some materials prepared under certain conditions or by certain methods may vary considerably from the figures in the table.

Chemical Processing — February, 1952



if your plant handles liquids...



...YOU NEED DEPENDABLE PUMPS FROM WEINMAN

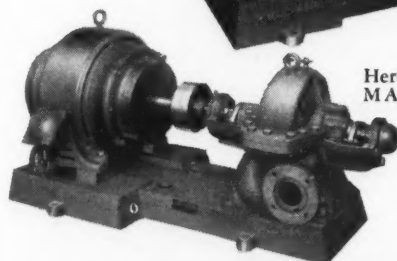
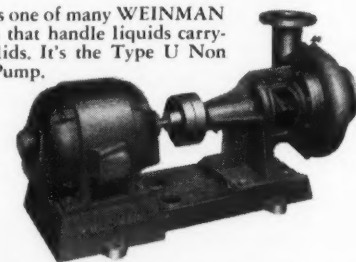
Your plant production can never be any better than the liquid handling equipment that controls it. A pump breakdown can cripple an entire plant. That's why WEINMAN Centrifugals are in such demand today.

These pumps are designed *right* for your special requirements. Their long-suit is their complete dependability. Once installed, they can be forgotten.

The man to talk to is your WEINMAN representative. He knows your industry and how Centrifugal Pumps can help with your liquid handling. He is backed up by an organization with only one thing on its mind—building industry's most efficient centrifugal pumps.

Want pump help? Just write, wire or phone.

Here is one of many WEINMAN pumps that handle liquids carrying solids. It's the Type U Non Clog Pump.



Here is the WEINMAN two stage Split-Case Pump for high head service.

Representatives in principal cities

Built by Centrifugal Specialists
The WEINMAN Pump Mfg. Co.
294 SPRUCE STREET • COLUMBUS 8 • OHIO

When inquiring check CP 9343 on handy form, pgs. 2-3

CHEMICAL PROCESSING

NEW LITERATURE

Studded with charts, graphs, etc., on carbonyl iron powders

Containing a minimum of text, 32-page booklet presents the essential facts on production, application and performance of iron carbonyl powders. Photomicrographs, charts, tables and pertinent mathematical formulas abound in the publication, together with a bibliography of 105 references to articles at home and abroad. Material itself is produced by reacting crude iron with carbon monoxide to form iron pentacarbonyl in vapor form which upon additional heating deposits metallic iron as submicroscopic crystals. The latter build to form microscopic spheres.

Uses have been found for the particles in communications (radio and TV), in magnetic clutches and brakes, in powder metallurgy, and as catalysts in chemical processes.

"Carbonyl Iron Powders" is issued by Antara Chemicals Division, General Dyestuff Corp., Dept. CP-99, 435 Hudson St., New York 14, N. Y. When inquiring specify CP 9344 on handy form, pages 2 and 3.

Details Mn-steel feeders for handling shock loads

Bulletin covers complete line of manganese-steel feeders which are designed and built for handling shock loads of heavy abrasive materials. Explained in detail are the physical characteristics of these feeders, along with information on capacities, horsepower and dimensions. Various types of drives are described in the publication's 20 pages, as well as three systems for complete lubrication. Bul 630 is issued by Pioneer Engineering Works, Dept. CP, 1515 Central Ave., Minneapolis 13, Minn. When inquiring specify CP 9345 on handy form, pages 2 and 3.

Cites advantages of electric heat transfer unit

Four-page bulletin specifies an electric heat transfer system which can be employed in providing uniform temperatures particularly for extruders, jacketed pans, presses, kettles, and dies. Included among the advantages of the unit are: no spot-overheating as sometimes occurs in direct heating, high velocity flow over heater surfaces, years of service without cleaning or changing circulating heat transfer liquids, and use of degassed oils for higher thermal conductivity and efficiency. Bul 107 is issued by Gerin Mfg. Co., Inc., Dept. CP, 683 N. Fifth Ave., Newark 7, N. J. When inquiring specify CP 9346 on handy form, pages 2 and 3.

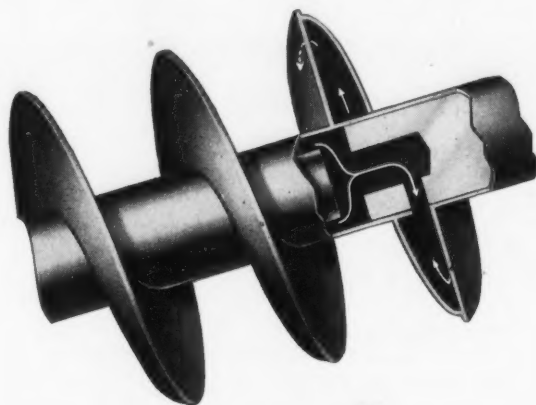
Fork truck features described

Illustrated with detailed drawings and full specifications, manufacturer's bulletin presents four compact "walkie" styles of electric trucks.

Described in the literature are the telescopic tilting fork truck, the non-tilt fork truck, the platform truck, and the straddle type fork truck. All are designed for lifting, moving and stacking heavy loads with minimum labor expenditure. Models each have electric lift and electric travel, with convenient push-button control in the handle. Compactness and short turning radius with maneuverability in close quarters are among their features.

Bul 5143 is issued by Barrett-Cravens Co., Dept. CP, 4609 S. Western Blvd., Chicago 9, Ill. When inquiring specify CP 9347 on handy form, pages 2 and 3.

A great new advancement in heat exchangers...

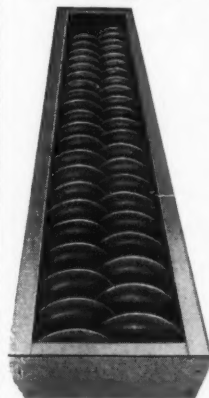


THE holo-flite^{*} PROCESSOR (HOLLOW-FLITE)

A simpler, more compact way to cool slurries, solids or pastes—in continuous flow!

Do you have processes where slurries, solids, pulps or pastes must be cooled or cooked? Do you know you can now handle such processes—in continuous flow—in as little as 1/5th the space required by other types of heat exchangers—and with many other important advantages?

The newly-developed HOLO-FLITE Processor is the answer!



what IT IS!

Basically the HOLO-FLITE consists of two or more flights of hollow-bladed screw conveyors. The product to be processed moves in a trough around the conveyor screws. The heat-transfer fluid circulates through the hollow blades and shafts of the conveyor. The product is constantly rotated into, around, under and over the blades and shafts through which the heat-transfer fluid is circulating, assuring quick, uniform heat passage between the two mediums—as the product is continuously moved along in a bulk-flow without interruptions!

Get the complete story on HOLO-FLITE savings and how this new advancement can simplify your processing operations. It is backed by the same organization that pioneered COTTRELL Precipitators and MULTICLONE Collectors—your assurance of complete dependability.

*Reg. T.M.



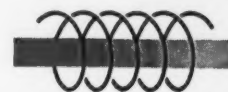
DETAILED INFORMATION! New 8 page bulletin describing HOLO-FLITE features and applications will gladly be sent on request. Write, wire or phone for your free copy!

why IT'S BETTER!

The HOLO-FLITE principle provides many important advantages in modern processing operations...



ITS LARGE HEAT-TRANSFER SURFACE requires far less space—as little as 1/5th the space required by other heat-exchange equipment. Further, flights can be "stacked" as high as desired to save floor space, simplify installation!



ITS SLOW ROTATION IS SO GENTLE that granular and powdered solids are handled with no dusting—little or no particle abrasion. Result—no dust recovery problems... simple, inexpensive installation.



IT IS ADAPTABLE to a wide range of applications—handles solids, pulps, pastes and slurries with equal ease. Heat transfer agent can be refrigerant, water or other fluids to provide a wide range of temperatures. Cooled products can be packed directly from HOLO-FLITE discharge, saving time, space and additional handling.



IT CAN BE DESIGNED to handle virtually any capacity by varying the diameter and length of the flights, and the number of "tiers."

WESTERN

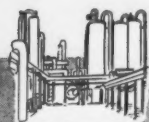
Precipitation

CORPORATION

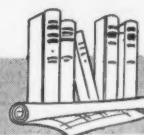
ENGINEERS, DESIGNERS & MANUFACTURERS OF EQUIPMENT FOR COLLECTION OF SUSPENDED MATERIALS FROM GASES & LIQUORS

Main Offices: 1023 WEST NINTH STREET, LOS ANGELES 15, CALIFORNIA
CHRYSLER BLDG. NEW YORK 17 • 1 LaSALLE ST. BLDG., 1 N. LaSALLE ST., CHICAGO 2 • HOBART BUILDING, SAN FRANCISCO 4, CALIFORNIA
PRECIPITATION CO. OF CANADA, LTD., DOMINION SQ. BLDG., MONTREAL

When inquiring check CP 9348 on handy form, pgs. 2-3



Processing and Engineering Data



Formulae and Graph for Determining Orifice Plate Sizes

(For Cold Water — 60°F)

For use with the graph, simplified flow formulae are used, as follows:

Formula 1

$$\beta^2 K = \frac{Q \times 0.1764}{(d_1)^2 \times h^{1/2}}$$

Formula 2 (orifice opening size)

$$d_2 = d_1 \times \beta$$

where $\beta^2 K$ = factor

Q = rate of flow in gpm

d_2 = diameter of orifice opening in inches

d_1 = diameter of pipe line in inches

h = differential in inches of water

THE following examples illustrate the use of the accompanying graph (pg. 128) in computing approximate orifice sizes for cold water. For these examples, actual inside diameters have been used (taken from C. I. Schedule 40 pipe). If a table showing actual pipe ID is not available, use the nominal pipe size. The slight difference will not be appreciable in the final result. This method can be used for flange, vena contracta, and radius taps.

Example 1

Differential = 60 inches

$60^{1/2} = 7.746$

Max. flow = 800 gpm

Line size = 8 inches

ID = 7.981 inches

From Formula 1, by substituting known values

$$\beta^2 K = \frac{800 \times 0.1764}{(7.981)^2 \times 7.746} = 0.286$$

On graph, curve A, read up and to the left to find

$$\beta = 0.65$$

From Formula 2

$$d_2 = 7.981 \times 0.65 = 5.18 \text{ inches, approx.}$$

To find maximum loss of head for above orifice, use same factor (0.286) and from graph, curve B, read up and to right, to obtain value of 57%.

Then — maximum loss of head is $60 \times 0.57 = 34.2$ inches of water.

Example 2

(12-inch mercury manometer)

Maximum differential = 12.57 x 12 inches
= 151 inches of water

$$151^{1/2} = 12.288$$

Maximum flow = 350 gpm

Line size = 4 inches

ID = 4.026 inches

From Formula 1, by substituting known values

$$\beta^2 K = \frac{350 \times 0.1764}{(4.026)^2 \times 12.288} = 0.310$$

On graph, curve A, read up and to left to find $\beta = 0.675$

From Formula 2

$$d_2 = 4.026 \times 0.675 = 2.72 \text{ inches, approx.}$$

To find maximum loss of head for above orifice, use same factor (0.310) and from graph, curve B, read up and to the right, to obtain value of 55% of differential.

Then — maximum loss of head is $151 \times 0.55 = 83$ inches of water. (Graph on page 138.)

"Processing and Engineering Data" will be a permanent feature of CHEMICAL PROCESSING. The editors hope that the data presented each month will be helpful to our readers. No doubt many will want to clip out some of the pages and place them in a loose-leaf binder for permanent keeping. Data published will be in the form of nomographs, plots, charts, tables, etc., so that they will be sources of quickest reference.

Courtesy Builders-Providence, Inc., Division of Builders Iron Foundry, 345 Harris Avenue, Providence 1, Rhode Island.

Chemical Processing — February, 1952

Seventh of a Series



"K" on a fitting is our Guarantee-your safeguard

Kuhns fittings have carried the trade-mark "K" ever since the business was established in 1887. In fact, Kuhns fittings were the very first to be identified by a trade-mark.

With the passage of the years, and with millions of "K" Fittings proving their worth in actual service, "K" has become a symbol of quality. That long and commendable background, therefore, imposes upon us the obligation to maintain that high quality standard.

In using "K" Fittings, you are well fortified against installation and service troubles. The precision machining of "K" Fittings assures convenient make-up, tight joints, and symmetrical runs. Scientific metallurgical control, skillful molding, and critical inspection assure fittings without sand holes, cold checks, uneven walls, or other imperfections.

These facts are verified by the experience of contractors everywhere. That's why the usage of "K" Fittings is continually growing.

It will pay you to order fittings from suppliers who handle the "K" line. Be sure to insist upon "K's."

THE KUHNS BROTHERS COMPANY

1808 McCall Street
Dayton 1, Ohio

Established 1887

K

CAST-IRON FITTINGS

3,000 Shapes and Sizes

When inquiring check CP 9349 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Constitutes a modern English text on phosphatide chemistry

Containing 564 pages, this volume fulfills a need for a modern text in English on the chemistry of phosphatides. Virtually every phase of work on this group of phosphorus-containing lipids is reviewed and reported on. Introductory material goes into the nomenclature and classification of lipids and research evidence for the structure of lecithins, cephalins, sphingomyelins, and minor phosphatides. Major sections are devoted to discussing the chemical and physical properties, as well as occurrence in various plants and animals.

A number of analytical techniques are detailed including: micro- and macroextraction procedures; determination from hydrolysis products, by preferential hydrolysis and by isotope dilution; and solubility methods. From the biochemical and physiological standpoint, the text delves into the: general aspects of lipid metabolism, phosphatides as metabolic elements, role of phosphatide hydrolysis products in metabolism, role of phosphatides in pathological conditions, and the serological and oxidative functions of phosphatides.

Thorough-going coverage is given the industrial implications of phosphatides. In particular, commercial recovery processes are described, as are the myriad uses of these materials. It is mentioned, for example, that phosphatides can be incorporated into products of the petroleum industry, as well as into rubber, leather, protective coatings, printing inks, plastics, textiles and soaps. To obtain "The Phosphatides", remit \$10 direct to Reinhold Publishing Corp., Dept. CP, 330 W. 42nd St., New York 18, N.Y. When inquiring specify CP 9350 on handy form, pages 2 and 3.

Shows easy cleaning of pressure-leaf filter

Four-page bulletin describes new retractable-carriage pressure-leaf filter for applications involving high percents of solids. Photographs reveal how easy it is to open filter cover, slide leaf carriage out, and knock cake from leaves. Specifications and capacities are presented — filter area ranges from 100 to 1200 sq ft per filter, flow capacities 20 to 1000 gpm. Recommended uses are listed.

Bul H-1051 is issued by Niagara Filter Corporation, Dept. CP, 3080 Main St., Buffalo 14, N. Y. When inquiring specify CP 9351 on handy form, pages 2 and 3.

Drawn seamless tube is finer than hair

Four-page illustrated bulletin tells about manufacturer's seamless tubing made to close tolerance from various metals and alloys, sizes ranging from 0.010 to 5/8" OD. Tolerances to 0.0005" can be obtained. Steps used in producing tubing are briefly discussed. One page covers a main specialty — very fine aluminum alloy tubing, some finer than a human hair, currently being used as the indicating needle in measuring instruments.

Another specialty shown is a type of coaxial cable formed by drawing seamless tubing over an insulated conductor, providing a shield that protects against abrasion, moisture and electrical interference. "Uniform Tubes," issued by Uniform Tubes, Dept. CP, Level Road, Collegeville 2, Pa. When inquiring specify CP 9352 on handy form, pages 2 and 3.



WYANDOTTE
CHEMICALS

Application of a new chemical is frequently as important as the chemical itself. We have a staff of skilled chemists whose job it is to help you. Let them!



TRY KREELON CD...NEW, for promoted detergency, superior soil suspension!

Wyandotte KREELON CD combines the advantages of a synthetic detergent and a detergent-promoter! It is the only product of its kind on the market.

Test these facts for yourself—see how new KREELON* CD benefits you, at an actual saving in the cost of your finished product.

Improves your product

KREELON CD combines the advantages of a quality detergent with a detergent-promoter, sodium CMC, in one homogeneous, rapidly dissolving product. Substituted for the alkylarylsulfonate detergent you're now using, in a properly

compounded household cleaner, it will give 20%-70% improvement in soil removal and whiteness retention. It promotes smooth, gentle, long-lasting suds . . . reduces skin irritation.

Advantages in compounding

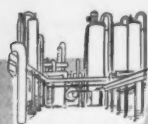
Because KREELON CD acts both as a detergent and promoter, it saves you storage space and handling time. It dissolves rapidly, for further time savings. It's dustless—minimizes housekeeping.

Whether you make general household cleaners, laundry compounds, scouring powders, building-maintenance or other cleaners—let us show you how KREELON CD can give you a superior cleaning compound easier, faster, cheaper. Write for complete data. Wyandotte Chemicals Corporation, Wyandotte, Michigan. Offices in Principal Cities.

*REG. U.S. PAT. OFF.

 **Wyandotte**
CHEMICALS

When inquiring check CP 9353 on handy form, pgs. 2-3

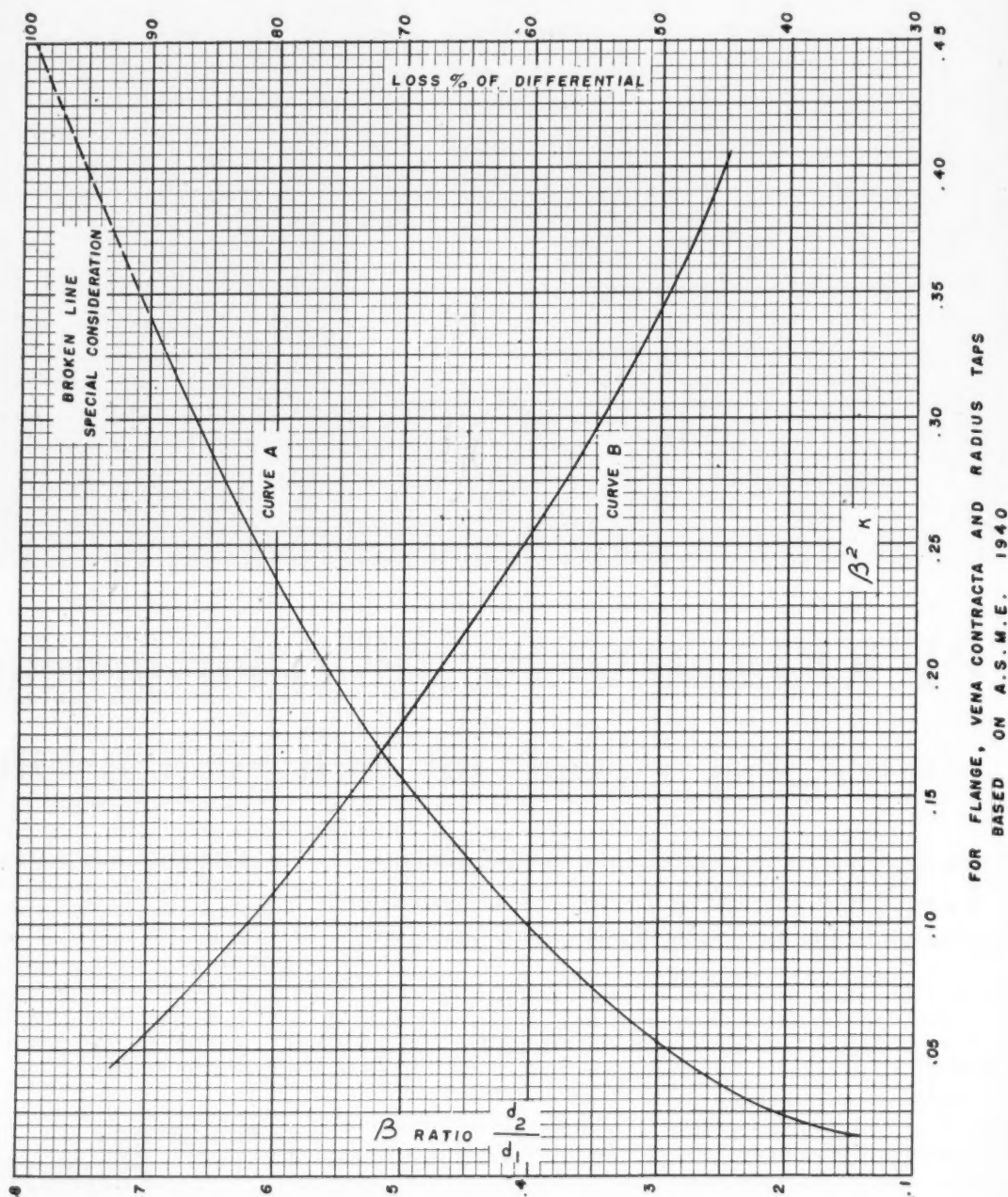


Processing and Engineering Data



Graph for Determining Orifice Plate Capacity

(See page 136 for explanation)



Chemical Processing — February, 1952

IT WILL LAST LONGER...



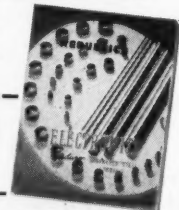
COST LESS PER YEAR...

IT'S ELECTRUNITE ENDURO *Stainless Steel Tubing*

• You invest in stainless steel process equipment to get extra years of service with minimum maintenance per year.

Be sure you design right with ELECTRUNITE ENDURO Stainless Steel Tubing... you'll get even more service per dollar per year from every pound of critically-scarce stainless steel that's available.

In 28 pages, the booklet "Republic ELECTRUNITE ENDURO Stainless Steel Tubing" gives data, design information, and fabrication procedures to help you get all the advantages from this time-proved metal. Write today on your company letterhead.



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ELECTRUNITE®
STAINLESS STEEL TUBING AND PIPE

When inquiring check CP 9354 on handy form, pgs. 2-3

CHEMICAL PROCESSING

**Four types of elevating tables
in 2000-20,000 lb capacity**

Company's complete line of Hydraulic Elevating Tables finds discussion in four-page, two-color bulletin. Dimensions, capacities (2000 to 20,000 lb), and illustrations cover four models: portable elevating table; sheet and strip feeding table; multiple cylinder, sheet feeding table; and scissors-type, sheet feeding table.

Bul 206 is issued by The Raymond Corp., Dept. CP, 5788 Madison St., Greene, N. Y. When inquiring specify CP 9355 on handy form, pages 2 and 3.

**Continuous processing systems
for tire cords and fabrics**

Sixth in a series, 28-page brochure fully describes integrated tension systems and component machines for continuous processing of nylon, rayon, and cotton tire cords and fabric. Major types of equipment treated are tire cord impregnators, fabric cementers, calender trains, and nylon fabric hot-stretching machines. Detailed treatment of components for latex impregnators — mill roll let-offs, fabric take-ups, tension stands, and dipping machines — is also provided. Forty photographs and diagrams aid in explanation of the processing systems.

Systems described cover wide range of capacities — from 1000-tires-per-day latexing machines to equipment for operation above 70 yards per minute. In center of booklet is large drawing and detailed description of a cord impregnator in train with rubber calenders for both woven and weftless fabric.

Copies of "Blueprint for Industry, Part VI" are available without charge to executives, process engineers, and operating men who request it on business stationery. Charge to others is \$1.00 per copy. Requests and orders should be addressed to Industrial Ovens, Inc., Dept. CP, 13825 Triskett Rd., Cleveland 11, Ohio.

**Guides selection of ball,
pebble, and rod mills**

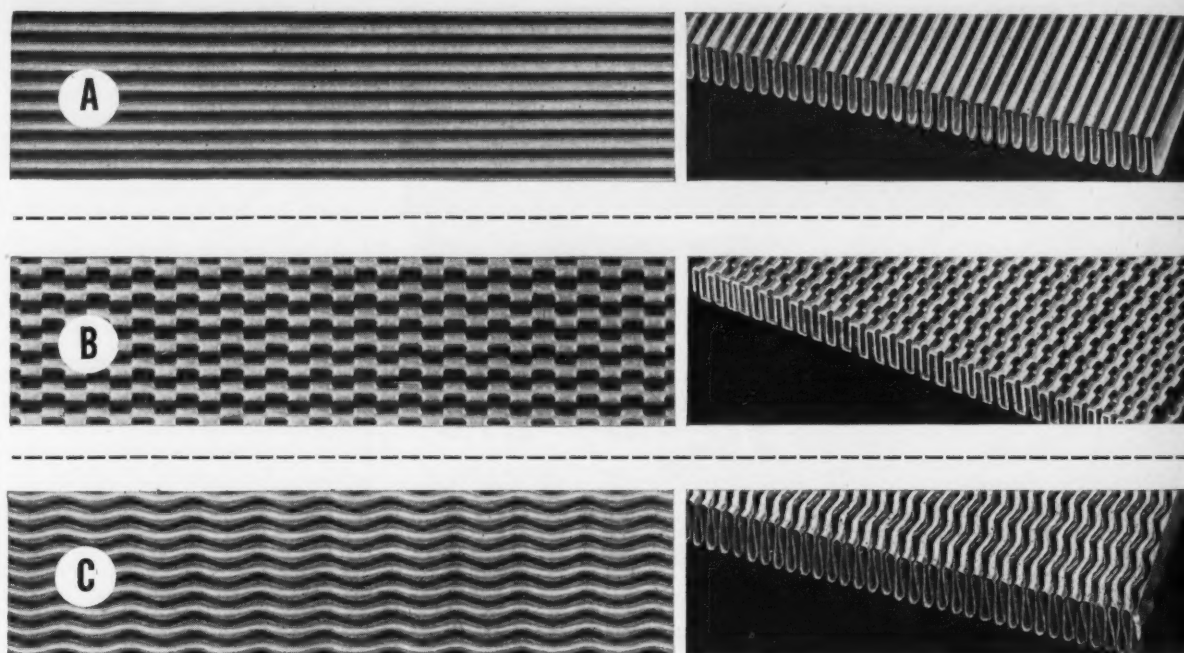
Comprehensive collection of engineering data on rod, pebble, and ball mills is contained in 44-page bulletin punched for ring-binding. With plenty of drawings and photographs, the bulletin suggests points to consider when choosing a grinding mill, gives basic design of different types of mills, and describes grinding circuits. Equations and tables to use in mill selection are provided, as are closed and open circuit grindability indices for many materials. Tables provide specifications, dimensions, and capacities for manufacturer's mills.

Bul 07B6718A is issued by Allis-Chalmers Manufacturing Company, Dept. CP, 1151 S. 70th St., Milwaukee, Wis. When inquiring specify CP 9356 on handy form, pages 2 and 3.

**Freezers hold temperatures
as low as -165°F**

Condensed four-page bulletin presents specifications of more than 45 standard industrial freezers ranging from capacities of four to 45 cu ft. Temperatures range from -40 to as low as -165°F. "Webber Industrial Freezer," issued by Industrial Division, Webber Appliance Co., Inc., Dept. CP, 2740 Madison Ave., Indianapolis 3, Ind. When inquiring specify CP 9357 on handy form, pages 2 and 3.

FEBRUARY, 1952



Three of the many types of fin section available.

TRANE Brazed Aluminum Heat Exchangers Offer Wide Choice of Heat Transfer Surfaces for Greater Design Flexibility

With Trane Brazed Aluminum Heat Exchangers, you choose from a great variety of surfaces in solving exactly your heat transfer problems. They may be straight and continuous (A). They may be serrated (B). Or they can be of herringbone design (C). With these basic designs, exactly the right surface can be selected to provide the correct ratio of heat transfer to pressure drop characteristics.

Many further variations of these general types are practical. The height and the thickness of the fin can be varied. So can the number of fins per inch. In fact, fins with entirely different patterns, heights and number of corrugations per inch can be used side-by-side to handle different fluids in the same exchanger.

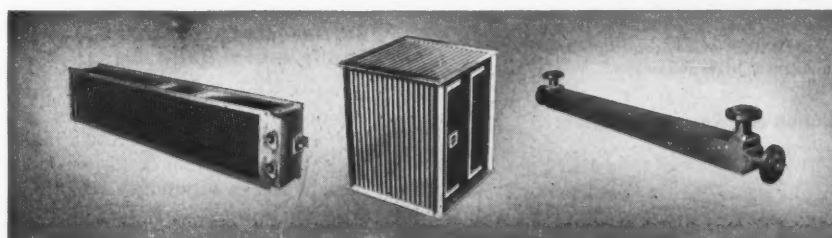
Thanks to this great flexibility you can provide

just the heat transfer, just the pressure drop volume, velocity number and direction of passes you want with Trane Brazed Aluminum Heat Exchangers.

Design flexibility is but one of the many advantages of Trane Brazed Aluminum Heat Exchangers. Compared to conventional exchangers, they produce more heat transfer efficiency in $\frac{1}{4}$ the space with $\frac{1}{3}$ the weight at approximately $\frac{1}{2}$ the cost.

These all-aluminum heat exchangers are rugged, too. They take test pressures up to 1,000 pounds per square inch and temperatures from -300° to 500° F.

Whether the job calls for high or low temperatures or pressures, one stream or many, Trane Brazed Aluminum Heat Exchangers can be the answer. Contact your Trane sales office or write direct.



Here are a few of the many varieties of Trane Brazed Aluminum Heat Exchangers which are now in actual service: 1) A cross flow unit for liquid-to-gas exchange used for condensing

purposes. 2) A cross flow gas-to-gas unit which is used for intercooling for aircraft engines. 3) A counter flow liquid-to-liquid exchanger for high pressure application.

TRANE

MANUFACTURING ENGINEERS
OF HEATING, VENTILATING AND
AIR CONDITIONING EQUIPMENT

THE TRANE COMPANY, LA CROSSE, WIS.
Eastern Mfg. Division . . . Scranton, Pennsylvania
Trane Company of Canada, Ltd. . . . Toronto

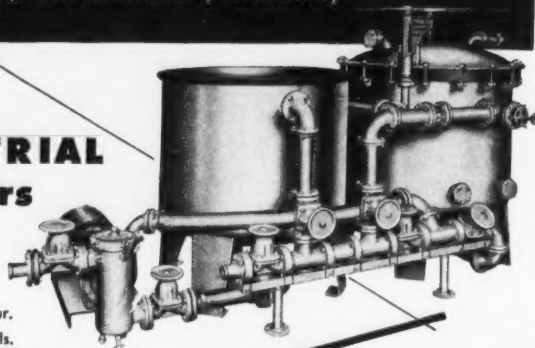
OFFICES IN 80 U. S.
AND 14 CANADIAN CITIES

When inquiring check CP 9358 on handy form, pgs. 2-3

Bonus Performance IN SOLUTION CLARIFICATION

Any Solution—Any Quantity

INDUSTRIAL Filters



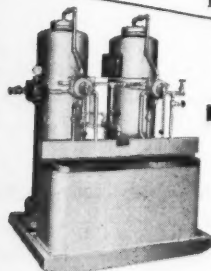
100 to 15,000 gallons per hour.
Portable and stationary models.
Special filtering systems engineered to
meet unusual requirements.

and it's performance that counts . . .

The engineering, design, and construction of INDUSTRIAL filters have proved out in long service. With the outlet near the top of the chamber a uniform precoat is deposited on the filter leaves as the solution fills the chamber. The outside lockup simplifies the lockup of the leaf and bag assemblies. INDUSTRIAL exclusive air-wash cleaning method practically eliminates the usual labor, downtime, and the inconveniences of dismantling the filter after each cycle. INDUSTRIAL filters are often in operation for months without removing the cover. All these features add up to bonus performance—clear filtrate at low over-all cost per gallon.

Ask for Bulletin 100-CPI

This bulletin gives complete information on INDUSTRIAL features, the sizes and capacities of the standard models, and details on the uses of INDUSTRIAL filters for solution clarification.



INDUSTRIAL Ion-Exchange Demineralizers For Low-Cost Chemically Pure Water

Standard INDUSTRIAL demineralizer units are available with capacities of 200 to 1000 gph. Special units of any capacity are engineered to requirements.

Write for Full Information and Recommendations

INDUSTRIAL FILTER & PUMP MFG. CO.

5908 Ogden Avenue
Chicago 50, Illinois

| | | |
|---------------------------------------------------------|----------------------|----------------------------------------------------|
| FILTERS Pressure Type | PUMPS Centrifugal | CORROSION TESTING APPARATUS Salt Fog • Humidity |
| RUBBER DIVISION Vulcanized Linings • Molded Products | | WATER DEMINERALIZERS |

When inquiring check CP 9359 on handy form, pgs. 2-3

NEW LITERATURE

Systematic study of copolymerization

This 269-page book presents a systematic account of the theoretical and experimental work that has been carried out in the field of copolymerization. An attempt is made here to formulate principles of general validity that have emerged as a consequence of the contributions of the many scientists interested in the field.

Analyzed in detail are the reaction mechanisms of copolymerized systems. Emphasis has been placed on investigating composition and structure, especially monomer distribution, in such systems. Resonance and polymerization problems particularly are taken into account. Aim is to establish rules for the tailoring of copolymers of a desired structure and also a relationship between the proportion of the monomers.

Some topics discussed include: structure of copolymer chains, copolymerization involving divinyl monomers, and rates and molecular weights in copolymerization. To obtain "Copolymerization," remit \$6.80 direct to Interscience Publishers, Inc., Dept. CP, 250 Fifth Ave., New York 1, N.Y. When inquiring specify CP 9360 on handy form, pages 2 and 3.

Inaugurate service for patent abstracts

Publication explains service whereby firm supplies weekly photographic copies of patent abstracts as issued in the Official Patent Gazette. System has two important features. Subscriber gets only class and sub-class or type of patents in which he is interested. Also, abstracts are reproduced full size on 4 x 6" cards, punched for instant sorting.

"Picturesort Patent Abstract Service" is issued by Picturesort Co., Dept. CP, 246 Church St., New Haven 10, Conn. When inquiring specify CP 9361 on handy form, pages 2 and 3.

Barrier cream protects hands, metal finish

Six-page pamphlet lists eight skin preparations that form film barriers over the skin and that also protect highly polished metals from corrosion due to perspiration in handling.

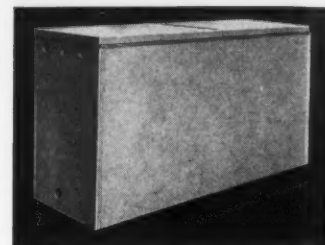
Each of the creams, lotions, or skin conditioners listed are treated separately in regard to recommended use, characteristics, packaging. One full page contains a list of nearly 150 chemicals or processes, ranging from acetates to zinc dust (wet or dry),

FOR NITRATION COOLING

use

DOLE

Ice- Cels



The heat of nitration, if uncontrolled, can be costly and hazardous. Nitric acid reaction temperature must be held to prescribed, narrow limits—and this calls for cooling. DOLE Ice-Cels offer the chemical industry a positive, economical method of cooling by chilled water.

The DOLE Ice-Cel is an assembly of DOLE Vacuum Plates immersed in a tank of water and connected to a compressor. As the compressor runs, ice forms on the plates and this ice, in melting, provides an abundance of chilled water of any desired temperature which can be circulated through the coils or jackets of the nitrators. More dependable than well water, requiring less space than brine tanks, DOLE Ice-Cels are ideal for nitration plants or for any processes in the manufacture of chemicals where cooling is required.

Write for literature and name of nearest
DOLE representative.



DOLE REFRIGERATING CO.

5952 N. PULASKI RD., CHICAGO 30, ILL.
103 Park Ave., New York 17

In Canada: Dole Refrigerating Products Limited, 44 Elgin Street, Brantford, Ontario

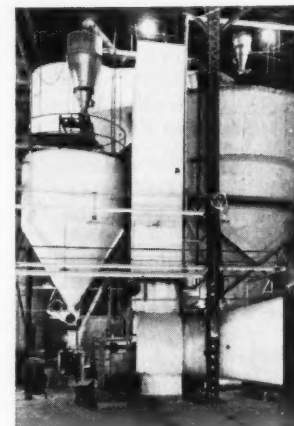
When inquiring check CP 9362 on handy form, pgs. 2-3

SPRAY DRY HEAVY CHEMICALS

at Low Cost

This high-capacity equipment is especially suitable for handling heavy chemicals. It is direct fired with oil or gas, and gives amazingly low-cost operation.

Typical uses: silica gel, kaolin clay, manganese sulfate, calcium carbonate, chrome sulfate, sodium phosphates.



Swenson Spray Dryers successfully handle a wide variety of organic and inorganic chemicals.

Send for Bulletin D-105

SWENSON EVAPORATOR CO.

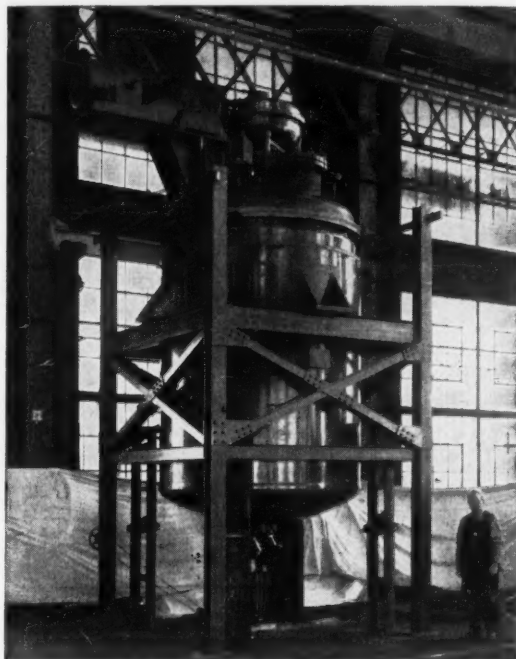
Division of Whiting Corporation
15667 Lathrop Ave. Harvey, Illinois

When inquiring check CP 9363 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Buflovak-Dopp Kettles With Double Motion Agitators

**SAVE Time and Production Costs
in Processing Heavy Viscous Materials**



2750-Gallon BUFLOVAK-DOPP Grease Kettle.

Investigate these BUFLOVAK Features for your processing problem:

- * Thorough mixing, freedom from lumps and stratification . . . quickly and efficiently.
- * No local overheating.
- * Increase of heat transfer rates for rapid heating and cooling cycles.
- * Easy and rapid discharge of material.
- * Safe, quiet operation.
- * Sturdy construction . . . dependable operation . . . low maintenance cost.
- * Built in sizes from 1-gal. laboratory units to largest plant size kettles.
- * Facilities available for pre-testing operation.

Write for complete information.

BUFLOVAK EQUIPMENT DIVISION

of Blaw-Knox Company

1645 Fillmore Ave.

Buffalo 11, N. Y.

When inquiring check CP 9364 on handy form, pgs. 2-3

FEBRUARY, 1952

NEW LITERATURE

with special application or prepared formulas for their removal or protection.

"The Answer to Industrial Dermatitis" is issued by the Safety Division, The Boyer-Campbell Company, Dept. CP, 6540 St. Antoine, Detroit 2, Mich. When inquiring check CP 9365 on handy form, pages 2 and 3.

Bulletin announces new saturable transformers

Manufacturer's new standard line of saturable transformers is announced in bulletin. Power output of these units is phase-reversible AC with output levels of one watt to one kw both 60 cycles per second. Bulletin lists applications and gives typical circuits with actual component values. Speed of response of these circuits is 1 to 5 milliseconds.

Bulletin is issued by Magnetic Amplifiers, Inc., Affiliate of General Ceramics & Steatite Corp., Dept. CP, 11-54 44th Drive, Long Island City 1, N. Y. When inquiring specify CP 9366 on handy form, pages 2 and 3.

Discusses monobed demineralizer

Two-page catalog sheet describes monobed demineralizer recently added to manufacturer's line. Included in leaflet are picture of unit, diagram with parts identified, description of parts, and specifications chart. Demineralizer is available with flow rates from 10 to 10,000 gph.

Mono-Bed Demineralizer Catalog Sheet is issued by Penfield Manufacturing Co., Inc., Dept. CP, 19 High School Ave., Meriden, Conn. When inquiring specify CP 9367 on handy form, pages 2 and 3.

Welding technique discussed

Welding technique used in fabricating sulfuric acid sludge tanks 24' in diam is discussed in this well-illustrated quarterly issue. Also covered are uses of various resistance welding techniques for increased weld quality, plus case histories of overlaying electric furnace trunion shafts and repairing cast iron brackets with manufacturer's electrodes.

The four-page publication, "Ampco Welding News," No. 50, is issued by Ampco Metal, Inc., Dept. CP, 1735 S. 38th St., Milwaukee 46, Wis. When inquiring specify CP 9368 on handy form, pages 2 and 3.

"Boiling HNO₃!...

just like

water with

Acid-Proof

TANTALUM

"Nitric acid, hydrochloric acid—even aqua regia are no problem in our plant since we started using tantalum for heating, cooling, and condensing operations. Tantalum is not merely 'corrosion-resisting'; to almost all acids, it is totally inert, even at boiling temperatures. From every angle, it is the most economical material we can use."



TANTALUM the acid-proof metal!

Tantalum's speed in heat transfer, freedom from thermal shock, and acid-proof properties add up to equipment that increases production, saves time and space, saves maintenance, saves shutdown time, and eliminates product contamination due to corroded equipment.

Use TANTALUM With Economy
for most acid solutions, corrosive
gases or vapors; not with HF, alkalis,
substances containing free SO₃.

Tantalum Steam Coil. Additional heating capacity obtained by building coil on large steel flange protected by tantalum tube sheet, eliminating risers. Connections are at bottom.

Write for the Fansteel booklet, "Tantalum Acid-Proof Chemical Equipment", and consult Fansteel for designs and recommendations.



Acid-Proof

TANTALUM

22402

Fansteel Metallurgical Corporation NORTH CHICAGO, ILLINOIS, U.S.A.

When inquiring check CP 9369 on handy form, pgs. 2-3

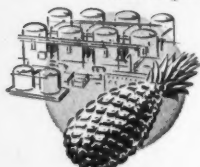
Sure we manufacture Thickeners, Classifiers,
and Heavy Process Equipment...

BUT DO YOU KNOW WHAT WE'RE DOING IN ION-EXCHANGE?

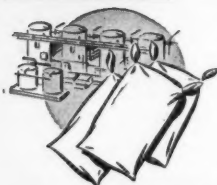
FOR INSTANCE,
DO YOU KNOW THAT DORR



...engineered the process, designed the plant, supplied the equipment
and supervised the initial operation of the biggest ion-exchange
installation ever installed for purification of waste fruit juices?



...is installing a two-stage D-I System for the recovery and purification
of a new organic chemical process developed
by the client... equipment supplied
by Dorrr?



...manufactures a "package" D-I unit ideal for the production of 100 to
1000 gallons per hour of high-purity water at
low cost... as demonstrated at an East Coast
pharmaceutical plant where D-I water
is costing but 13 cents per 1000 gallons?



These are typical examples of our work in ion-exchange... indicative of the scope of our service and equipment range. If you are currently exploring the possibilities of ion-exchange for new processes or those already established, we will be glad to work with you on any basis you desire. And our ion-exchange facilities are backed by solid experience in chemical engineering.

Bulletin 4081 hits the high-spots of Dorrrco
D-I Systems. Address your request to Ion-
Exchange Division, The Dorrr Company,
Engineers, Barry Place, Stamford, Conn.



WORLD - WIDE RESEARCH - ENGINEERING - EQUIPMENT

THE DORR COMPANY - ENGINEERS - STAMFORD, CONN.
Associated Companies and Representatives in the principal cities of the world

When inquiring check CP 9370 on handy form, pgs. 2-3

NEW LITERATURE

Offers information on gas temperature

To facilitate reference to the literature on measuring and controlling gas temperatures in such machines as gas turbines and jet engines, National Bureau of Standards has published "Bibliography on the Measurement of Gas Temperature."

Classified topically in accordance with instrument type, bibliography (14 pages) of approximately 400 pertinent references provides investigators with an organized list of articles on and related to gas temperature measurement. Covers 20 years prior to Jan, 1951. Introduction reviews various temperatures of interest in hot gases moving at high velocities.

To obtain Circular 513 remit 15c direct to US Dept. of Commerce, Washington 25, DC.

Stress need for water clarification

Uses of diatomaceous filter aids in filtering water for reclamation and recycling in industrial processing, and prevention of pollution in waste disposal are covered in this 23-page bulletin. Purification of domestic and industrial potable supply is also reviewed.

Although the text deals mainly with water filtration in several specific industries, the data can also be generally applied to clarification of any water.

Technical service Bul B-12W is issued by the Dicalite Div., Great Lakes Carbon Corp., Dept. CP, 18 E. 48th St., New York 17, N.Y. When inquiring specify CP 9371 on handy form, pages 2 and 3.

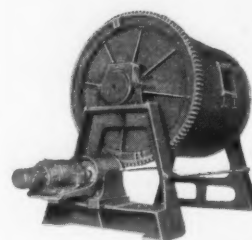
Rotary unions apply to many services

Steam up to 150 psi, hot or cold water, oil up to 575°F (300°C), air, natural gases and vacuum are some of the services to which rotary unions can be applied. And, types of machinery represented in the group where successful applications have been made include: rotary kettles, ball mills, mixers, coaters, and rubber mills.

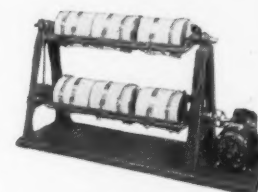
In this 24-page catalog, specifications, application photos, construction features and drawings of the manufacturer's products are presented. Cat 600 is issued by Perfecting Service Co., Dept. CP, 332 Atando Ave., Charlotte, N.C. When inquiring specify CP 9372 on handy form, pages 2 and 3.

When You Need Grinding and Blending Capacity...

Depend on Abbé-Engineered Mills



For wet or dry grinding, mixing, compounding and pulverizing on all types of raw materials, intermediates and finished products... you will find the type and size of mill to meet your needs. Pebble and Ball Mills in 32 sizes for large capacities. Jar Mills for smaller batches from 1 qt. to 60 gal. Jar Rolling Machines for varying size grinding jars.



Write for
Catalog 67



ABBÉ ENGINEERING CO. 46 CHURCH STREET
NEW YORK 7, N. Y.
Makers of
ABBÉ ENGINEERING Ball, Pebble and Jar Mills

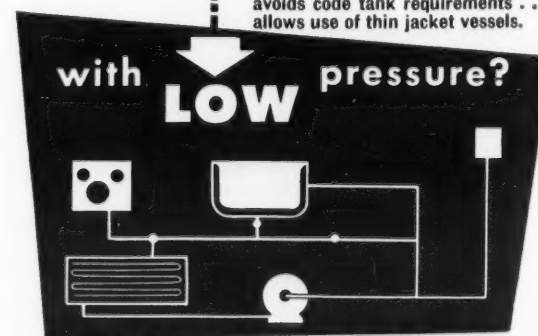
When inquiring check CP 9373 on handy form, pgs. 2-3

NEED HIGH TEMPERATURE

SEND FOR
BULLETIN
101
TODAY.

Wherever limited space, close control, or temperatures beyond the range of steam are required, you should consider electric fluid heat transfer.

Today, Hynes systems are being used for heating all types of jacketed vessels, heat exchangers, platens and rolls. The heart of the system is the patented Hynes Multi-Pass Heater which has eliminated oil carbonization and breakdown troubles. High temperature with low pressure avoids code tank requirements... allows use of thin jacket vessels.



HYNES ELECTRIC HEATING DIVISION
MARTIN-QUAID COMPANY
1815 W. Sedgley Ave., Philadelphia 32, Pa.

When inquiring check CP 9374 on handy form, pgs. 2-3

CHEMICAL PROCESSING

How to select and install expansion joints

Illustrated 16-page catalog covers all types of corrugated expansion joints, including those of special design. Rather complete treatment is given to design, selection and installation of the joints; some problems are worked out numerically to aid the reader's understanding. Tables provide specifications of free-flexing joints for low-pressure applications, controlled-flexing joints for greater amounts of transverse, and of other joints for extremely high-pressure applications (to 5500 psi).

Cat CMH-127, issued by Flexonics Corporation (formerly Chicago Metal Hose Corporation), Dept. CP, Maywood, Ill. When inquiring specify CP 9375 on handy form, pages 2 and 3

Small book on large subject — fluorine

Rather than a comprehensive study of fluorine and its compounds, this pocket-book size, 153-page text serves as a review and reference source on the topic. Introductory material covers in brief fashion—history, occurrence, physical and chemical properties, and the analytical chemistry of fluorine. Inorganic compounds of fluorine are treated individually in order of the groups of the periodic table, concluding with the fluorides of the four groups of transition elements.

Receiving the lion's share of space in the book are the organic compounds of fluorine. Various methods of synthesis are outlined and then are given methods of preparation, properties, etc., for haloalkanes, acids, alcohols, ethers, aldehydes, ketones, amines, olefins, and aromatic compounds.

In addition, a single section is given over to fluorocarbons which are compounds containing only carbon and fluorine and are possessed of unusual chemical and thermal stability. (Also see the Materials section of this issue for an article about increasing availability of certain of these compounds.) To obtain "Fluorine and Its Compounds", remit \$1.75 direct to John Wiley & Sons, Inc., Dept. CP, 440 Fourth Ave., New York 16, N.Y. When inquiring specify CP 9376 on handy form, pages 2 and 3.

Hydraulic setting refractories is topic of bulletin

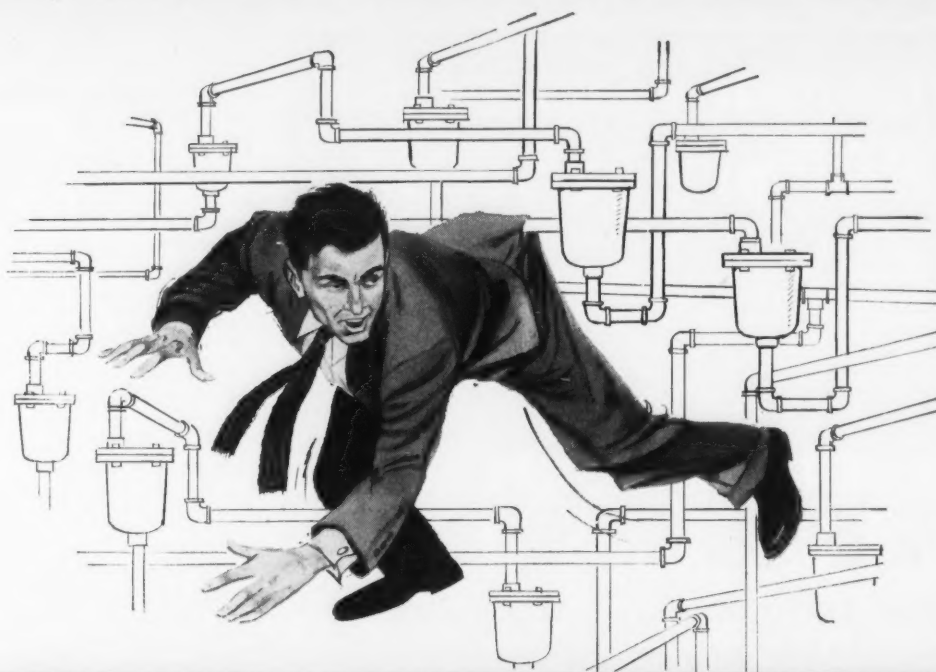
Presented in 12 pages is material on five types of manufacturer's refractories for casting special shapes, and three products for gunning and slap troweling applications. Photographs show typical uses and illustrate handling methods. Tables give pertinent information on application of these materials. "Hydraulic Setting Refractories" is issued by Johns-Manville, 22 East 40th St., New York 16, N. Y. When inquiring specify CP 9377 on handy form, pages 2 and 3.

Contains data and views on water treatment equip

Information in four-page bulletin covers equipment for boiler-feed water treatment. Installation views and data relate to ion-exchange, softener, and mixed-bed deionizer units.

Bul "P-30," a publication of Illinois Water Treatment Co., Dept. CP, Rockford, Ill. When inquiring specify CP 9378 on handy form, pages 2 and 3.

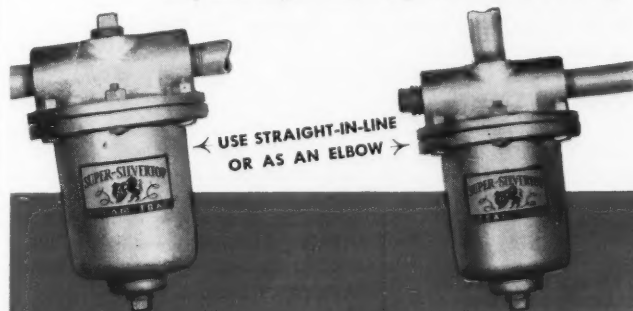
FEBRUARY, 1952



has your steam trap system got YOU by the seat of the pants?

Has your steam trap system got you by the seat of the pants? Does it make you disconnect the piping whenever you replace a seat or service a trap—Does it make you take 50 minutes longer than it should to replace a trap when it wears out . . . Does it cause you to replace traps frequently. Then change over to Super-Silvertops. You can service any size Super-Silvertop without disturbing

a single fitting. You save up to 60 minutes every time a new trap is installed as Super-Silvertops fit snugly like an elbow or a coupling. You get longer trap life as the patented guided bucket results in better performance . . . and the special Anderloy seat and valve means longer life. Start today to run your steam trap system instead of letting it run you. Begin a replacement program to change your entire system to Super-Silvertops. Write for the book "Solving Steam Trap Problems" which tells all about the wonderful savings you will receive.



SUPER-SILVERTOPS SAVE MONEY

THE V. D. ANDERSON COMPANY 1932 West 96th Street • Cleveland 2, Ohio

Gentlemen: Please send without obligation "Solving Steam Trap Problems."

Name

Address

City State

In Canada: Bawden Industries, Ltd. Toronto

When inquiring check CP 9379 on handy form, pgs. 2-3

Permanently Impervious to HCL or Equivalents



IMPERVITE

HEAT EXCHANGERS — ABSORBERS

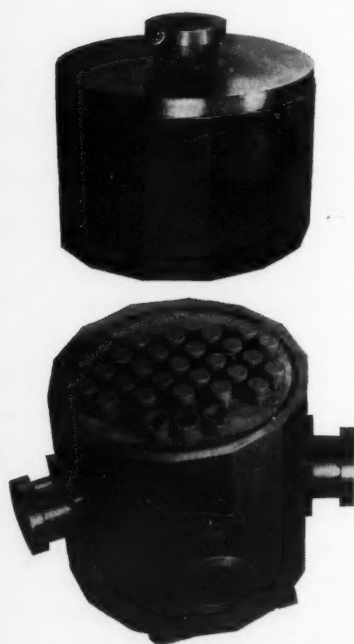
Even such a tough corrosive as Hydrochloric Acid will not break down the resistance of Impervite, made from graphite impregnated with special-formula resins developed exclusively by Falls Industries. Typical of the many types of heat exchangers made by Falls from Impervite is the 158-tube horizontal tube-and-shell unit shown above. Also: 7, 14, and 24-tube stock units or special designs up to 222 tubes. Impervite absorbers for processing gases from 40% to 100% HCL. Plate or immersion heaters to any capacity.

IMPERVITE TOWERS

for absorption, scrubbing, fractionation, extraction and related processing are made in five stock sizes with 12", 15", 18", 24" and 30" ID sections easily assembled to any suitable height. Sections up to 24" are monolithic cylinders machined from solid Impervite. Larger sizes are machined segments permanently cemented together. Typical 33" sections at left are top and base of special 36-foot tower.

PIPES, VALVES, FITTINGS of Impervite, all with machine threads, are available in sizes from 1/2" to 10" ID. Falls also offers chemically impervious pumps, with Impervite at all exposed points.

SEE PAGES 685 TO 688 CHEMICAL
INDUSTRIES CATALOG, OR WRITE
FOR IMPERVITE BULLETIN.



Falls Industries, Inc.

AURORA ROAD - SOLON, OHIO

When inquiring check CP 9380 on handy form, pgs. 2-3

NEW LITERATURE

Exhibit metal packings in catalog

Eight-page bulletin illustrates and describes manufacturer's line of flexible metallic packings. Also provided is information on standard sizes, standard packages, and approximate weights.

Included are descriptions, service recommendations, and illustrations of "V" metal insert packings, metallic valve stem, plastic core metallic face, all metallic, flexible metallic, high temperature aluminum, and braided copper packings. Each type is available in several forms.

"Flexible Metallic Packings" is issued by Packing Division, Raybestos-Manhattan, Inc., Dept. CP, Manheim, Pa. When inquiring specify CP 9381 on handy form, pages 2 and 3.

Practical info relating to pesticide formulation

Entitled "Agricultural Chemical Formulators Manual of Pesticide Concentrates," this bulletin brings an up to date compilation of data related to the practical requirements in the insecticide and herbicide fields. Technical Bul 31 is issued by The Emulsol Corp., Dept. CP, 59 E. Madison St., Chicago 3, Ill. When inquiring specify 9382 on handy form, pages 2 and 3.

Shows continuous boiler blow-off valve

Four-page bulletin contains detailed information on construction and operating features of recently developed rotary-disc continuous blow-off valve for boilers. Valve is supplied with 15 calibrated orifices which are quickly interchangeable for any required flow, to correspond to a flow chart provided with each unit.

Manufacturer reports that the valve conserves fuel by eliminating waste of manual blow-off, maintains uniform boiler water concentrations, and prevents foaming and steam carry-over. Bul 152 is issued by The Uniblow Valve Company, Dept. CP, 1920 W. 77th St., Cleveland 2, Ohio. When inquiring specify CP 9383 on handy form, pages 2 and 3.

Data on condensation prevention

Thirty-one-page handbook (4 x 7 1/4") supplemented by numerous area and humidity charts, gives much interesting information on condensation drip

MEET ALL SANITARY WASHING FACILITY REQUIREMENTS



36" Circular Bradley serves 5 to 6 persons simultaneously—each with a spray of clean tempered running water.

• The sanitary washing facilities provided by Bradley Washfountains have long been recognized by industry. The central sprayhead serves each person with fresh running water. There are no faucets to touch or maintain . . . no contaminating water collects in the bowl.

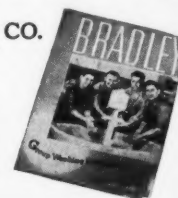
With Bradleys space is saved, and installation costs greatly reduced because there are only 3 piping connections (hot water, cold water and drain) for each multi-person Washfountain.

Catalog 4701 describes and illustrates all types. Copy free on request.

BRADLEY WASHFOUNTAIN CO.
2399 W. Michigan St.,
Milwaukee 1, Wisconsin

BRADLEY
Washfountains

Distributed through Plumbing Wholesalers



When inquiring check CP 9384 on handy form, pgs. 2-3



For Central Station Vacuum Systems
... See Vol. 1, No. 2

For Chamber Evacuation
... See Vol. 2, No. 1

"Much Ado About Nothing" carries in each issue down-to-earth data on the technique of using high vacuum. The last two issues of the Beach-Russ house organ covering the above subjects are still in print. Write for copies if you are interested.

BEACH-RUSS COMPANY
46 CHURCH STREET - NEW YORK 7, N. Y.

When inquiring check CP 9385 on handy form, pgs. 2-3

CHEMICAL PROCESSING

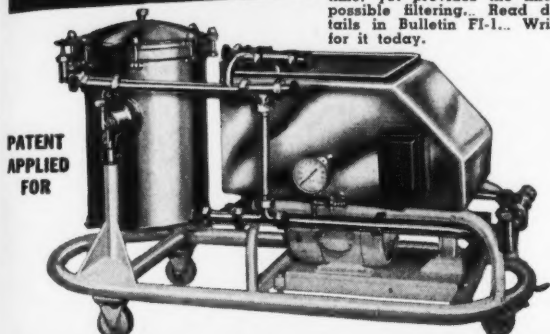
GROEN FILTER

VERTICAL
TUBE

offers
new FILTERING EFFICIENCY

**NO CLOTH BAGS • NO
SHEETS • NO PAPER PADS
SELF-PROLONGING FIL-
TRATION CYCLE • COM-
PLETE PRODUCT RECOVERY
THOROUGH AUTOMATIC
CLEANING**

Modern, faster, much more economical filtering of liquids... with the rigidly proven GROEN Stainless Steel Sanitary VERTICAL TUBE FILTER... a new member of the widely used GROEN Line of Industrial Processing Units. Shown is Model LSP40, available portable or stationary. Effects COMPLETE PRODUCT RECOVERY. Greatly prolongs filtering cycle. Exclusive backwashing method eliminates disassembly. THOROUGH CLEANING a matter of mere minutes. No hosing or scraping. Saves BIG on labor and time, yet provides the finest possible filtering. Read details in Bulletin FI-1... Write for it today.



PATENT
APPLIED
FOR

2-SHAFT MIXER FAMOUS FOR SUPREME EFFICIENCY

GROEN

STAINLESS STEEL
STEAM JACKETED

**TWIN-SHAFT
MIXER KETTLE**

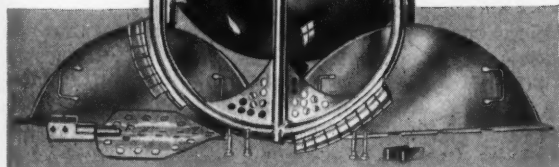
MODEL TA...noted industry-wide for heavy duty, double action 2-shaft performance. Meets strictest SANITARY codes. Enclosed vertical motor drives: (1) a slow speed shaft with flexible finger-like contour-fitting scrapers; and (2) a high speed shaft using selected mixer. Instantly demountable shafts make agitator parts removable in few seconds...yet can't separate in operation. A great mixing unit!

Ask for
Bulletin
TAK-2

CUT SHOWS
AGITATOR
ASSEMBLY
REMOVED

HIGH SPEED
ROTA-THERM
JACKET
AVAILABLE

All stainless
advantages
PLUS fastest
cooking ever
known. Write
for Bulletin
RT-1.



GROEN MFG. CO.

4531 W. Armitage Ave. Chicago 39, Ill.

30 Church St., New York 7; 7 Front St., San Francisco 11

half a century of fine kettles

When inquiring check CP 9386 on handy form, pgs. 2-3

FEBRUARY, 1952

NEW LITERATURE

encountered in industry and how manufacturer's coating can cure it. It also shows how coating aids in preserving pipes and other metal material by preventing rust and corrosion.

Coating and its purpose are clearly defined as well as several methods of application for various uses: cold air conditioning ducts, tanks, hot water and steam lines, outdoor surfaces, ammonia and brine lines; as well as for concrete, composition, wood and plaster surfaces.

NoDrip handbook is issued by J. W. Mortell Co., Dept. CP, Kankakee, Ill. When inquiring specify CP 9387 on handy form, pages 2 and 3.

Find info here on dust collectors

Various sizes and models of cloth-tube type dust collectors are described in 36-page publication. Standard assembled and knocked-down models of this equipment have range of air flow capacities upward from 252 cfm and filter the air through different kinds of cloth — cotton, wool and synthetics — depending on the application.

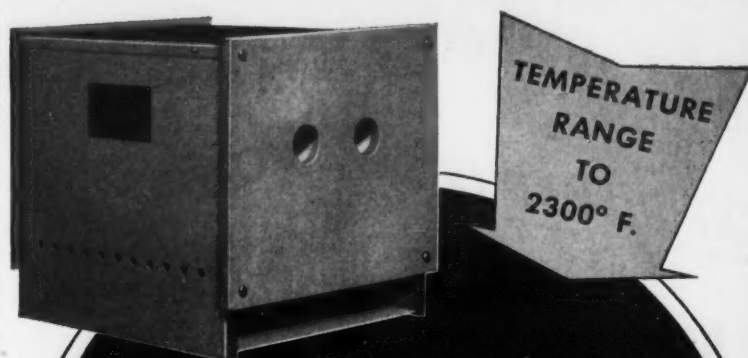
Description of each type of collector is accompanied by complete specifications, construction drawings, cut-away views and illustrations of typical installations. Cat 72-B is issued by American Wheelabrator & Equipment Corp., Dept. CP, Mishawaka, Ind. When inquiring specify CP 9388 on handy form, pages 2 and 3.

Emphasize correct packing, gasket

Recommendations to simplify problems of packing valves and pumps in the power plant are offered in this 5-page, illustrated bulletin. Considered uses are: dry gases, high temperature; cold oil, gasoline or grease; low pressure water; pipe flanges, high temperature; and boiler handholes or manholes.

Designed as a quick reference aid, one of the features is a flow sheet of a rudimentary industrial power plant with each unit keyed to proper packings and gaskets. Closeup photos and short paragraphs give construction information, sizes, and similar pertinent data. Packings and gaskets are grouped according to applications and services. Cross references are also included.

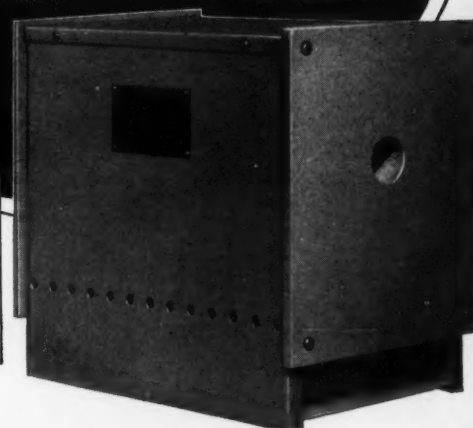
"Packings for the Power Plant" is issued by Johns-Manville, Dept. CP, 22 E. 40th St., New York 16, N. Y. When inquiring specify CP 9389 on handy form, pages 2 and 3.



TEMPERATURE
RANGE
TO
2300° F.

HEVI DUTY High Temperature Tube Type Furnaces

• The heating element of Alloy 10 wire is designed particularly for long life at high operating temperatures.



**For Carbon Determinations
Special Organic Analysis
Pyrometer Checking and Calibrations
Heat Treating
Experimental Operations**

For operations where temperatures from 2000°F. to 2300°F. are required, Hevi Duty tube type furnaces are the choice of many laboratories. Write for Bulletin LAB-138 or

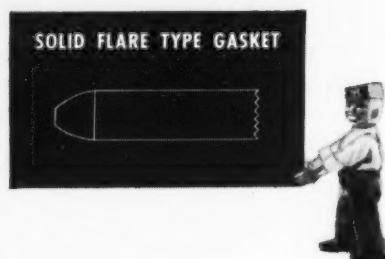
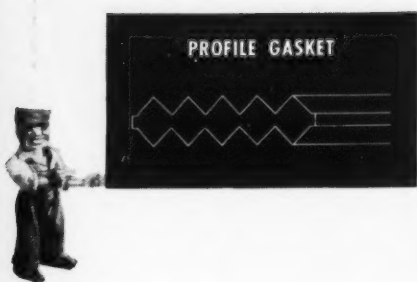
SEE YOUR LABORATORY SUPPLY DEALER

HEVI DUTY ELECTRIC COMPANY

HEAT TREATING FURNACES HEVI-DUTY ELECTRIC EXCLUSIVELY
DRY TYPE TRANSFORMERS — CONSTANT CURRENT REGULATORS
MILWAUKEE 1, WISCONSIN

When inquiring check CP 9390 on handy form, pgs. 2-3

**H.P. pipe gaskets
like these**
made to your order
**by gasket
specialists...**



...to save you both time and money

When you need metallic gaskets for high pressure piping, put the job up to Johns-Manville Goetze Gasket specialists. You benefit in many ways:

You get the exact gaskets you need for maximum efficiency under *your* operating conditions, tailor-made to fit *your* equipment. You get the savings in cost made possible by intensive specialization and modern production tooling. And you get the full benefit of over sixty years' experience in designing specialized metallic gaskets for industry's most complex sealing requirements.

Typical styles of Johns-Manville Goetze Gaskets that have been made to order for high pressure

piping service are shown above. The **flare** type gasket with bellows action and the solid **flare** type are particularly suited for pressures above 5000 psi; the profile and V-Tite gaskets are generally used for lower pressures. Each of these is fabricated to extremely close tolerances. Other styles can be made to any desired cross section to meet your individual requirements.

For more information about Johns-Manville Goetze Gaskets, write for your copy of Catalog PK-35A. Or send us your drawing or template for an immediate quotation. Address: Johns-Manville, Box 290, New York 16, N. Y.



Johns-Manville Goetze GASKETS

THERE'S A JOHNS-MANVILLE PACKING
AND GASKET FOR EVERY SERVICE

When inquiring check CP 9391 on handy form, pgs. 2-3

Briefs . . .

Heat transfer

Between a vertical tube and a fluidized air-solid mixture. The fluidized beds were small, solid particles of aerocat, pitch, coke, and iron. Size range 69 to 170 μ . Two tubes were used, one 2" and the other 3" diameter. Air velocities were 1/4 to 1' per second. Conception of the heat-transfer mechanism is stated and used as a guide for a dimensionless correlation of the experimental data for mechanically smooth, dense-phase fluidization. 12 pages, 20 figures, 8 tables. ("Chemical Engineering Progress," December 1951, page 637)

Rubber-to-metal bonding — panel discussion

Items commented on are metal preparation, compounding rubber stocks, and cements. 3 pages of questions and answers, total 7 pages. ("Rubber Age," November 1951, page 204)

Importance of ground water to industry

Paper is slanted to a specific industry, but the contents are generally applicable. Describes a water table. Tells the methods used in test drilling and sampling. Discusses the benefits which may be derived from ground water sampling and exploration. 6 pages, 4 figures. ("Petroleum Refiner," November 1951, page 101)

Large scale culture of algae

Five-page article reports on research work done in producing algae for feed. A satisfactory continuous process is described. Investigation developed the most satisfactory environment for growth. Variables studied were temperature, carbon dioxide aeration, total culture volume, cell population density, nutrient concentration and agitation conditions. Tentative design for large scale process is based on limited experimental data and several assumptions. Includes 9 figures. ("Industrial and Engineering Chemistry," October 1951, page 2385)

Cracking sensitivities of polyethylene polymers

Determined by standard creep test methods. Two methods are described; one is particularly applicable for appraisal of test specimens in an experimental program, the other is applicable to the polymers fabricated in tubular form. Crack resistance is related to molecular weight. 3 pages, 4 figures. ("American Society for Testing Materials Bulletin," December 1951, page 47)

Application of fluid hydroforming

Author presents results secured in the operation of a pilot plant. Experimental data on the effects of temperature, pressure, tail gas recycle, pre-catalytic reforming, and catalyst life.

Chemical reactions and equilibria are shown and discussed. Process and equipment are described. Catalyst selection

CHEMICAL PROCESSING

from contemporary publications

Here's a quick look at interesting articles, appearing in other publications . . . as selected by Technical Editor, H. McCormack

is commented on with results which led to final choice. Operating data are tabulated for runs with different charging stocks and with varied objectives. Process is compared with a competitive one as to results. 7 pages, 10 figures, 17 tables. ("Petroleum Refiner," December 1951, page 102)

Fluorochemicals go commercial

An article with this heading deals with the production of fluorochemicals by electrochemical fluorination. Cell used is described and illustrated. Schematic drawing shows equipment sequence and steps in process.

Eight advantages claimed for this procedure, compared to use of fluorine, are cited. Operating conditions are commented on as well as flexibility of process. Process, to date, has produced few chemicals for market. 2 pages, 1 drawing, 2 photos. ("Chemical Engineering," December 1951, page 215)

Explosive characteristics of hydrogen peroxide vapor

Objectives of the studies reported in this paper: to provide better knowledge of the conditions under which hydrogen peroxide vapor at high concentrations may be safely handled; help provide an understanding of decomposition phenomena taking place when higher temperatures and pressures are reached. Ignition limits at atmospheric and subatmospheric pressures have been measured. Equipment and techniques are described. 8 pages, 10 figures. ("Industrial & Engineering Chemistry," November 1951, page 2507)

Copolymerization

Influence by certain addition agents is treated. Authors hoped to adduce evidence which would support one of the views regarding the functions of sugar, iron, etc., in the copolymerization of butadiene and styrene.

Experimental techniques are stated and polymerization recipes tabulated. Experimental results are tabulated and graphed. 9 pages, 5 tables, 2 figures. ("Canadian Journal of Chemistry," November 1951, page 949)

Production improved by better machine layout

Author says "Experience — has unearthed many things which can be done in the average plant, through simple changes in machine placement and layout which benefit in better work, more production, easier maintenance and higher employee efficiency."

Enumerates fundamentals to be met in placing equipment. Contrasts standardized and non-standardized production. Cites necessary requirements for lighting and safety. 1 page. ("The American Perfumer," Nov. 1951, page 359)

FEBRUARY, 1952

FACT

An average-size refinery can save \$50,000 in first cost by using Alcoa Aluminum Heat Exchanger Tubes!

(Figured on 20,000 Tubes)

This is based on current tube prices . . . $\frac{1}{2}$ less than seamless mild steel, $\frac{1}{2}$ as much as Admiralty, $\frac{1}{6}$ the cost of stainless. Compare these savings in aluminum against the metal you now use.

ALCOA

knows most about their use and application

Alcoa pioneered the use of aluminum in heat exchanger tubes 43 years ago. Although their sale today is limited by government regulation, you will want to start planning with a copy of the booklet, "Alcoa Aluminum Heat Exchanger Tubes". Write:

ALUMINUM COMPANY OF AMERICA

1861B Gulf Building • Pittsburgh 19, Pa.



OVER 6-MILLION FEET OF ALCOA TUBES ARE IN USE FOR APPLICATIONS LIKE THESE . . .

PETROLEUM

Condensers handling hydrocarbon fractions from such processes as Thermal and Catalytic cracking, reforming, polymerizing, etc.
Vapor recovery condensers
Lube oil coolers
Natural gas compressor after-coolers
Recompressor aftercoolers
Hydrogen sulfide gas coolers
Furfural condensers and heat exchangers

Propane chilling

Wax sweaters
Lean oil—rich oil exchangers
Amine solution coolers
Glycol-amine solution coolers, heat exchangers and re-boilers

CHEMICAL

Butanol
Ethanol
Ethylene Glycol
Glycerin

Hydroabietyl
Isopropanol
Methanol
Phenol
Propylene Glycol
Acetaldehyde
Formaldehyde
Furfural
Heptaldehyde
Acetic acid
Stearic, Palmitic, Maleic Oleic acids
Butyric acid
Naphtha

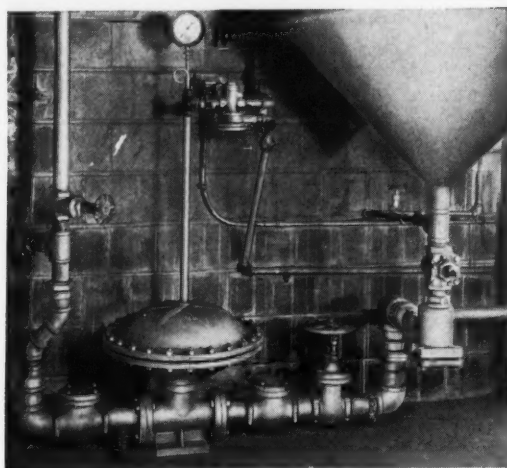
Ricinoleic acid
Acetanilide
Ammonia
Hydrogen Cyanide
Nitric acid (concentrated)
Pyridine
Hydrogen Sulfide
Benzene
Dichlorobenzene
Gasoline
Gelatin
Hydrogen Peroxide
Turpentine
Xylene

Use Alcoa Alclad 3S-H14 Heat Exchanger Tubes with fresh, brackish and salt-cooling waters

When inquiring check CP 9392 on handy form, pgs. 2-3

ODS — Diaphragm — SLURRY PUMP

link-free simplicity... a low maintenance feature!



There's nothing novel about a diaphragm being used to transmit a pumping impulse to stream of slurry or liquid. Up to that point the O.D.S. is similar to all other diaphragm slurry pumps.

But where the O.D.S. Pump does differ is in the way the diaphragm gets its impulse. In the O.D.S. this is created pneumatically — not mechanically. There is no link connecting the diaphragm with the source of power. There is no hole in the center of the diaphragm because there is no need for it. And further there are no slots or holes around the perimeter of the diaphragm where it is clamped between the cover and casing.

This combination of the no mechanical link to the diaphragm and 'no slots or holes in the diaphragm' makes the O.D.S. just about the simplest diaphragm slurry pump you can find anywhere. You can readily appreciate what these two design features mean in the way of low maintenance. Since maintenance is an important factor in pumps, why not get all the details about the O.D.S. Pump? In writing for our Bulletin 309-R, tell us about your pumping problem. You see, we also have the Olivite Centrifugal Chemical Pump. It might be better for your requirement.

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OLIVER UNITED FILTERS inc.

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EUROPE & NORTH AFRICA
Dorr-Oliver S.A. Brussels
Dorr-Oliver S.N.a.R.L. Paris

Dorr g.m.b.h. Wiesbaden (16)
Dorr-Oliver Co., Ltd., London, S.W. 1
Dorr-Oliver S.a.R.L. Milano
Dorr-Oliver, N.V. Amsterdam-C
PHILIPPINE ISLANDS
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WEST INDIES
Wm. A. Powe — Havana
SOUTH AMERICA & ASIA
The Dorr Co.
Stamford, Conn.
AUSTRALIA
Hobart Duff Pty., Ltd.
Melbourne
SOUTH AFRICA
E. L. Bateman Pty., Ltd.
Johannesburg, Transvaal

When inquiring check CP 9393 on handy form, pgs. 2-3

BRIEFS

Short cuts in pilot-plant engineering

Paper relates the practices of a large engineering firm and is written by their development engineer. Contrasts the differences in design practices for a commercial unit and a pilot plant and relates this difference to objectives in the two plants. Describes the procedure for the design of an assumed plant. Comments on fabricated equipment, piping system, electric heaters, control board and instrumentation. 4 pages, 4 photos. ("Mechanical Engineering," December 1951, page 975)

Production of alumina from clay

A process is described in which the clay, after roasting, is treated with hydrochloric acid. Insolubles are removed and aluminum is crystallized as the hydrated chloride, and thus separated from the other soluble chlorides. Operating techniques are discussed. Costs are stated for precipitating the aluminum chloride hexa hydrate. 2½ pages, 3 figures. ("Journal of Research of the National Bureau of Standards," October 1951, page 269)

Aromatics, high octane gasoline produced by Houdriforming

Authors define Houdriforming as "a continuous catalytic reforming process — reactions consisting predominantly of dehydrogenation, isomerization, aromatization, and hydrocracking." Operation of a pilot plant, using various charging stocks and operating with diverse objectives is discussed. Results are tabulated. 4 pages, 5 tables, 2 figures, 1 photo. ("Petroleum Refiner," November 1951, page 107)

Vinyls for surface coatings

Concluding paper in a series of five relating to this topic discusses such factors as vinylidene chloride polymers, polyvinyl chloride, polyblends, latices, chloride-acetate copolymers, vinyl type finishes and coatings, and organosols and plastisols. Properties of the various materials are commented on, including their solution in various solvents. Clear coatings as well as pigmented finishes are discussed. 6 pages, 3 photos. ("Paint and Varnish Production," December 1951, page 14)

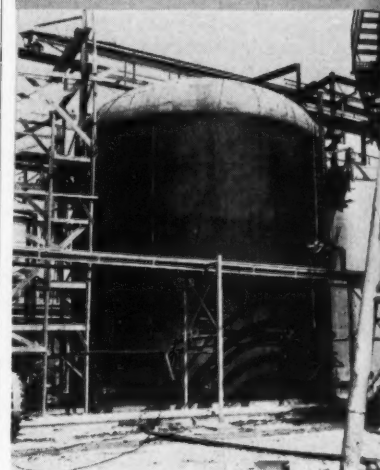
Plasticizers for GR-S gasket stocks

Paper is the report on an extended investigation as to plasticizers which function best in GR-S gaskets used at low temperatures. States test formula and preparation of stocks. Large number of screening tests made first, then more extended tests made on best stocks from screening tests. Best plasticizers for intended service were selected from a total of 181 tested. Characteristics of various stocks are shown in table form. 9 pages, 6 figures, 3 tables. ("Rubber Age," November 1951, page 195)

Mass-transfer rates on bubble plates

Papers present a quantitative study of the effect of bubble plate design and operating variables upon gas film and liquid film plate efficiencies. Gas and liquid efficiencies are related to foam height and foam density on the operat-

HORTON NICKEL CLAD TANK STORES 50 PER CENT CAUSTIC FOR LARGE CHEMICAL COMPANY



Caustic Soda and its solutions do not seriously attack iron and steel at ordinary storage temperatures. At higher temperatures the use of more resistant metals such as nickel is advised. That is why the nickel clad Horton tank, shown above, was selected by a large chemical company to store 50 per cent caustic.

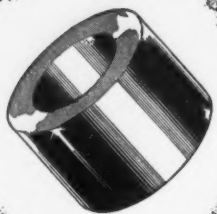
Your general and special chemical storage problems can be easily and economically handled by placing your confidence in the expert facilities of Chicago Bridge and Iron Company. We are fully equipped to fabricate and erect most types of steel structures for the chemical process industry — including a wide range of corrosion-resistant metals for special requirements. Write our nearest office for full details. There is no obligation on your part.

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Detroit 26 1535 Lafayette Bldg.
Houston 2 2151 C & I Life Bldg.
Los Angeles 17 1536 General Petroleum Bldg.
New York 6 3314-165 Broadway Bldg.
Philadelphia 3 1630-1700 Walnut St. Bldg.
San Francisco 4 1545-200 Bush St.
Seattle 1 1307 Henry Bldg.
Tulsa 3 1649 Hunt Bldg.
Washington 6, D. C. 1158 Cafritz Bldg.

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WORKS WHERE OTHERS WON'T



for
**SUBMERGED
OILLESS
BEARINGS**



WITH CONFIDENCE

- OPERATE DRY or SUBMERGED IN DYES, PLATING, CLEANING & CHEMICAL SOLUTIONS, GASOLINE, FOODSTUFFS
- TRULY OILLESS AND SELF-LUBRICATING
- EXTREMELY DURABLE
- CONSTANT COEFFICIENT OF FRICTION
- APPLICABLE OVER A WIDE TEMPERATURE RANGE — even where oil solidifies or carbonizes
- EXTENSIVELY USED IN CONVEYORS, PUMPS & OVENS
- ROTATING SEALS OF GRAPHALLOY ARE UNEXCELLED

GRAPHITE METALLIZING CORPORATION

1004 NEPPERHAN AVENUE, YONKERS 3, NEW YORK

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BRIEFS

ing tray. Method for predicting plate performance is presented and checked against experimental results. Paper I deals with fundamental factors, paper II with large trays. 12 pages, 21 figures. ("Chemical Engineering Progress," October and December 1951, pages 523 and 621)

Size reduction

Includes comminution theories, recent research, design improvements and special techniques. Comments on the industrial importance of operations of this kind and explores the meagerness of our theoretical knowledge. Article also cites some crusher facts and figures, indicates major lines of research now in progress, and mentions recent improvements in mill and crusher design. 4½ pages, 5 photos, 2 tables, bibliography. ("International Chemical Engineering — London," December 1951, page 577)

Cyanides from coke oven gas

Potential production of chemicals from hydrogen cyanide and hydrogen sulfide in coke oven gas is discussed. Commented on specifically is a process developed by Koppers Company in which both hydrogen sulfide and hydrogen cyanide are recovered. Safety factors receive extended comment. Potentials of the process are discussed. 11 pages, 6 figures, 6 photos, 2 tables. ("Industrial & Engineering Chemistry," September 1951, page 1882)

Infrared absorption spectra of high-nitrogen content compounds

Presents results of an investigation having as its objective the identification of various groups of nitrogen containing compounds by means of their infrared absorption spectra. Thirty-eight compounds were studied — substituted guanidines and related substances. Infrared spectra are plotted; absorption bands of all compounds studied have wave lengths tabulated. 10 pages, 2 tables, 40 figures. ("Analytical Chemistry," November 1951, page 1594)

Fabric filter media

Paper deals with the physical properties of fabric filter media and relates these properties to the difficulties encountered in filtration. Discusses methods which may be used to determine causes of difficulties and states procedures to be used in eliminating these difficulties. Comments on development of high twist yarns to be used in fabric filter media are new and interesting. 5 pages, 6 figures. ("Chemical Engineering Progress," November 1951, page 545)

Effect of column hold-up in batch distillation

This effect was studied as related to sharpness of separation in the batch distillation of binary mixtures at constant reflux ratio. Calculations involved use of a differential analyzer. Instantaneous values of distillate and residue compositions as well as of a fraction of original kettle charge distilled over, were calculated for varied values of column hold-up and reflux ratios. 10 pages, 10 figures, 3 tables. ("Industrial & Engineering Chemistry," November 1951, page 2592)



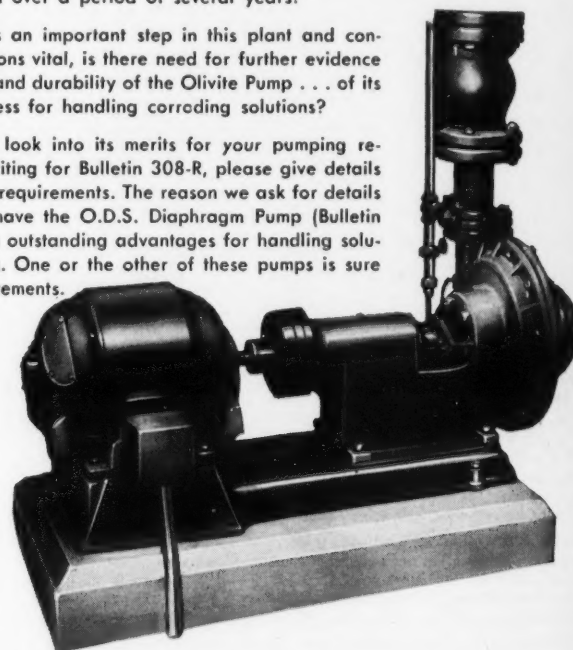
Approved to the Extent
of Over 100 Pumps in One Plant

HERE, in the east there's a large chemical plant with extensive acid pumping operations. Not only is the total volume handled very large but several different solutions, both hot and cold, are involved.

In this one plant there are over 100 Olivite Acid Handling Pumps . . . with purchases spread over a period of several years!

Since pumping is an important step in this plant and continuity of operations vital, is there need for further evidence of the efficiency and durability of the Olivite Pump . . . of its practical usefulness for handling corroding solutions?

We suggest you look into its merits for your pumping requirements. In writing for Bulletin 308-R, please give details of your pumping requirements. The reason we ask for details is that we also have the O.D.S. Diaphragm Pump (Bulletin 309-R) which has outstanding advantages for handling solutions and slurries. One or the other of these pumps is sure to fit your requirements.



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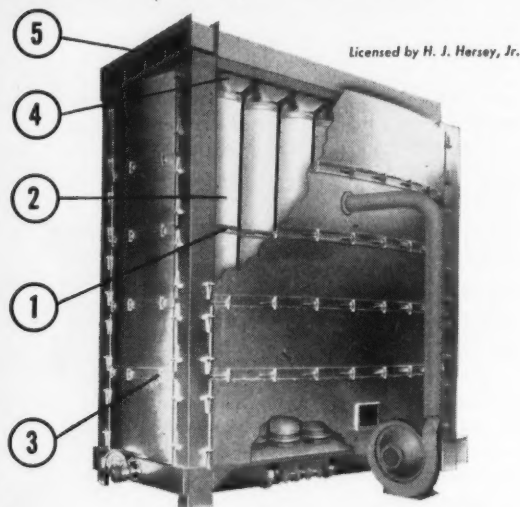
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When inquiring check CP 9396 on handy form, pgs. 2-3

ABSOLUTE RECOVERY OF FINEST DUST PARTICLES

DAY TYPE "AC" DUST FILTER

- ★ 99.998% COLLECTION EFFICIENCY
- ★ NO CLEANING SHUTDOWNS
- ★ HIGH AIR TO CLOTH RATIOS
- ★ SPECIAL FELT FILTER CLOTH



The DAY Type "AC" Dust Filter provides more efficient filtering for many chemical dusts. Here are several reasons for this outstanding performance, and why you can rely on the DAY Type "AC" Dust Filter to meet your dust filtering problems more efficiently and economically:

- 1. Continuous-Automatic Operation:** reverse jet rings travel slowly up and down the tubes cleaning them continuously with a maximum cloth area loss of only 1 3/4% at any time. This eliminates cleaning shutdowns and provides continuous, automatic operation with constant air volume.
- 2. Special Felt Filter Cloth:** the gentle, yet positive reverse jet cleaning action permits the use of this high grade wool filtering fabric which collects even the finest dust particles. (Actual tests have shown up to 99.998% collection efficiencies.) Also, the use of this type of cloth allows higher air-to-cloth ratios of 10, 15 or even 20 to 1 with uniform back pressures.
- 3. Outstanding Adaptability:** units can be furnished in multiples of 4 tubes; sectionalized steel panel housings (see illustration) for filters requiring vacuum or outdoor installations; quick opening clamps simplify erection and permit removal of sections for easy access to filter. (The DAY Type "AC" Dust Filter can be supplied without housing where housing is not essential.)
- 4. No Dust Catching Ledges:** DAY Type "AC" Filters with a pattern of square-to-round inlet fittings, have no flat surfaces where dust can accumulate and become contaminated.
- 5. Separated Dust Streams:** one DAY Type "AC" Dust Filter can handle as many as four different product streams simultaneously, without mixing.

WRITE-TO-DAY FOR BULLETIN 491



The DAY Company

SINCE 1881

852 3rd Ave. N.E., Minneapolis 13, Minn.
IN CANADA: P. O. Box 70, Ft. William, Ontario
Branch Plants in Ft. Worth, Buffalo and Welland, Ontario

Distillery Operates More Than 15 Years Without Lost-time Accident

Safety

**Closed venting system,
continuous sampling for
combustible vapor, and
other precautions give
National Distillers plant
enviable safety record**

POSITIVE protection against occurrence of fires or explosions is highly emphasized in the safety program of National Distillers Products Corporation's Cincinnati plant. Efficiency of the program is evidenced by the fact that there has not been a lost-time accident in the still house department for more than 15 years.

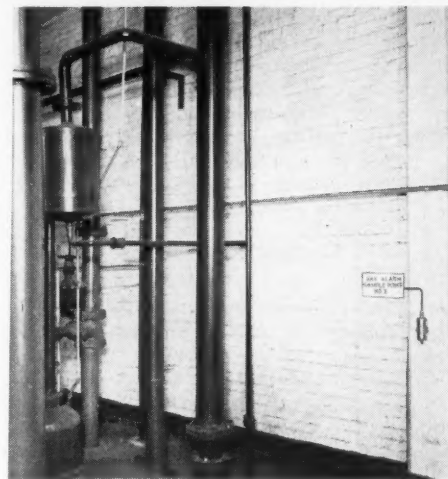
A closed venting system works in conjunction with a combustible-vapor detection and alarm system to assure that explosive concentrations of ethyl alcohol vapors do not build up within the plant. All vapors are piped to the outside through two copper headers, one 6" and one 10". The headers discharge on the roof through outlets equipped with flame arrestors. Each outlet has a mercoid switch arrangement that sets off an alarm if temperature of discharging vapors reaches 140°. Water seal tanks are used between stills and vent lines; plain pressure relief valves would discharge vapors into the building.

Just to make sure, other stringent precautionary measures are taken in the still house. Electrical fixtures and flashlights are explosion-proof, strict rules against open flames and smoking are enforced, spark-proof tools are used, and watchmen personally inspect the area during non-operating hours. When any welding or other "hot" work must be done in the house, spot tests are first made with portable, battery-powered combustible gas indicators.

The combustible gas alarm instrument panel is installed on the mezzanine floor where all controls for the still house are located. It is explosion-proof. Samples of air are drawn through tubes from eight strategic locations in the plant by a turbo-compressor integral with the equipment. Inlet of each sampling tube is equipped with a mechanical filter. Sampling cycle is continuous and automatic. A continuous and permanent record



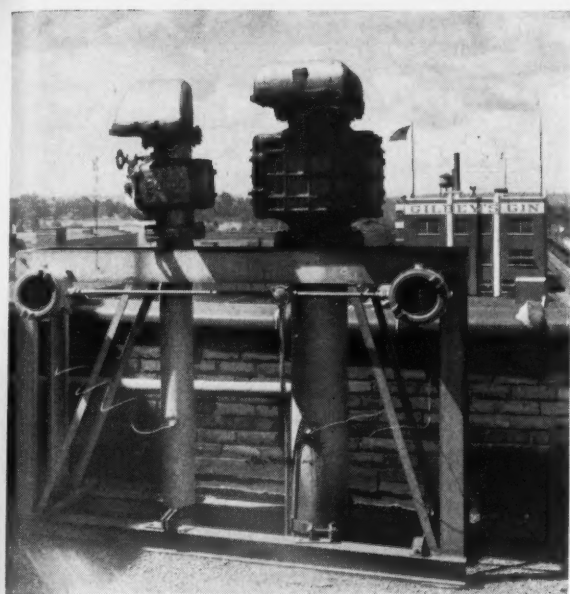
Instrument panel of MSA combustible gas alarm at National Distillers Products Corporation is at left. At top of panel are eight indicator lights, one for each sampling location in the still house. Arrow points to record of 5581 days without a lost time accident—more than 15 years of safe operation



Here's one of the eight sampling intakes scattered throughout the still house. At left is one of the water seals used instead of relief valve between still and closed venting system

of vapor conditions in the still house is provided by recording potentiometer connected to the analyzer. This instrument is in the boiler house which adjoins the still house, and is under constant scrutiny of boiler house engineers.

If concentration of ethyl alcohol vapor in any air sample reaches 40% of the lower explosive limit, a red light on the instrument panel on the mezzanine shines, and a loud horn blows. Another indicator light on the panel shows from which of the sampling points the vapor-air mixture was taken. The red light continues to glow, and the horn to blow, until analyzer is reset by manual



Outlets of closed venting system are equipped with flash-back arrestors. Mercoid switches actuate alarm if vapor temperature reaches 140°

pushbutton. Flow of air samples is visible in a rotameter behind explosion-proof glass face. Air flow is checked several times during a shift.

Analyzer is checked periodically by supplying one of the sampling lines with a known alcohol-air mixture.

Besides the tangible mechanical value of the alarm system, there is an important psychological value. Employees have more confidence in the safety of the working environment when they know that it is on the job.

(Combustible gas alarm and the portable gas indicator were supplied by Mine Safety Appliances Company, Dept. CP, Braddock, Thomas & Meade Sts., Pittsburgh 8, Pa. . . . or for more information check CP 9398 on handy form, pages 2 and 3.)

Specifies various electrical insulating materials

With accompanying photographs, 8-page bulletin details several types of electrical insulating materials. Given are properties and specifications of alkyd resin insulating finishes, varnished cloths and tapes, sealing and filling compounds, and silicone insulating materials. Bul CDL-35 is issued by Chemical Division, General Electric Co., Dept. CP, Pittsfield, Mass. When inquiring specify CP 9399 on handy form, pages 2 and 3.

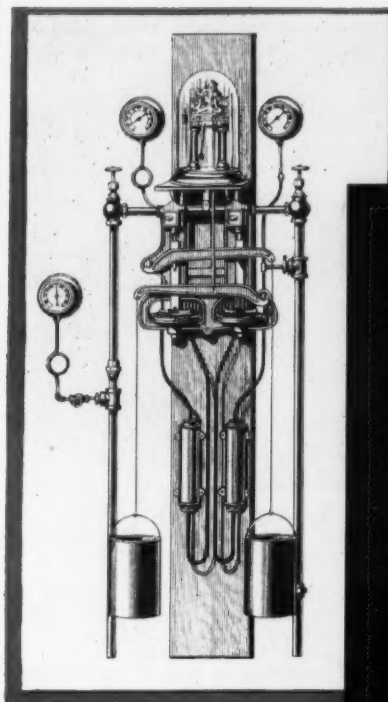
Recommend methods for shipping plywood

Material is prepared to assist plywood manufacturers in reducing damage to product in shipment by proper loading and bracing of plywood in closed cars. Clear-cut schematic drawings show several ways in which loading and bracing methods can be applied. Hold-down braces are shown in position to prevent shifting of plywood crosswise or lengthwise in the car.

Publication, General Information Series No. 516, is issued by Secretary's Office, Freight Loading and Container Section, Association of American Railroads, Dept. CP, 59 E. Van Buren St., Chicago 5, Ill.

FEBRUARY, 1952

ADSCO HAS COME A LONG WAY IN *75 years*



IN celebrating our 75th anniversary this year, we have been reflecting on the great advancement of steam distribution equipment since 1877, when the founders of ADSCO built the first district heating system. Compare, for example, the old-time flow meter shown at left and the rugged, compact condensate meter ADSCO makes today. The modern meter, with a much higher degree of accuracy, measures any clear liquid under gravity as well as steam condensate. In all our products—expansion joints, heat exchangers, pipe accessories, and meters—we have constantly striven for improvement in design and manufacture. Our present undisputed leadership is proof of our progressive organization—always keenly aware of the needs of our customers.

AMERICAN DISTRICT STEAM COMPANY, INC.
NORTH TONAWANDA, NEW YORK



When inquiring check CP 9400 on handy form, pgs. 2-3

ROTOJET[®]

Junior TUBE CLEANERS

for SMALL TUBES

The new Rotojet Junior Tube Cleaner has unusual power to clean small tubes quickly. This convenient, compact, self-contained cleaner, designed for one-man operation, needs very little headroom. Tube bundles can be cleaned without removal from shell.

Roto expanding heads and brushes with replaceable wearing elements save money and assure thorough cleaning of straight and curved tubes.

Send for Bulletin J-410 for full details.



Clean Tubes
from .495"
to 2.062" I.D.

S328 ROTOJET Junior
Water-driven Motor,
flexible coupling, and
expanding scraper

C434 ROTOJET Junior
Air-driven Motor, flexi-
ble coupling, expanding
brush.

S32 ROTOJET Junior
Air-driven Motor, cone
cutter, universal joint.



ELLIOTT COMPANY-ROTO DIVISION

141 Sussex Avenue

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When inquiring check CP 9401 on handy form, pgs. 2-3

SAFETY

**Glove's plastic coating
stays flexible . . .**

protective mitt suitable for lab
or production work

Uses: Protecting hands against
water, acids, alkaline materials, oils,
and other corrosives.

Features: Gloves retain flexibility
from freezing temperatures to as high
as 200°F. According to manufacturer,



Coated gloves are flexible enough
for lab use, but will also stand
rigors of production application

they are flexible enough for use in
delicate laboratory work, but sturdy
enough for severe operations.

Plastic coating is said to have excep-
tional adhesion to the canvas base and
to be free from pinholes.

Description: Hyflex gloves are made
by coating with a tough, abrasion
resistant vinyl plastisol in a new
centrifugal process.

(Department 3A, Houghton Labora-
tories, Inc., Dept. CP, Olean, N. Y.
. . . or for more information check CP
9402 on handy form, pages 2 and 3.)

**90% of radiated heat
reflected by metal-
lined mitt . . .**

two layers of asbestos enclose
aluminum-coated fabric

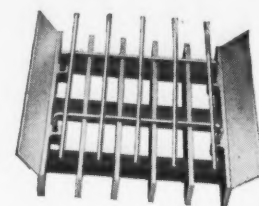
Uses: Protects worker's hands
against radiated and conducted heat.

Features: Experimental tests
showed 90% reflectance of radiated
heat. No visible effects were noted
after handling objects heated to
1200°F. Mitt does not irritate skin.

Description: The A-3101 Alumi-
num-Lined Mitt consists of a sheet of
aluminum-coated fabric between two
layers of heavy asbestos, the interior
being jersey-lined. Glove can be worn
on either hand. Asbestos is specially
treated for high abrasion resistance.

(Announced by The Milburn Com-
pany, Dept. CP, Detroit 7, Mich. . .
or for more information check CP
9403 on handy form, pages 2 and 3.)

you can't drop a nail through this grate



Climb up high and drop a steel nail on this
magnetic grate. Or throw nail as hard as you can
against it. The nail simply can't get through.

It's obvious that the nail or other iron or steel
piece will first strike a grid wire or a grate bar.
That will check the momentum. Then the object
will be caught with a strong magnetic grip.

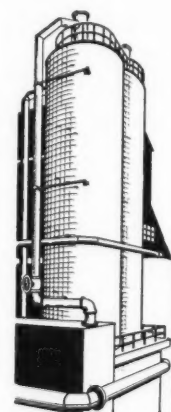
The Bauer Magnetic Grate is laid on a frame
in a hopper throat or floor opening to catch all
steel and iron inclusions in flowable materials—
grain, nuts, seeds, fruits, coffee, tea, spices, sand,
clay, lime, chemicals. The grates work well in
liquids, too.

Ask for Bulletin M-3-A which fully describes
the magnetic grate and other Bauer Magnetic
Separators.

THE BAUER BROS. CO.

1728 Sheridan Ave. • Springfield, Ohio

When inquiring check CP 9404 on handy form, pgs. 2-3



formula for profit

MARIETTA^{DESIGNED AND BUILT} STORAGE SYSTEM

Install a Marietta storage system. Fill
with chemicals that need air-tight, mois-
ture-proof storage. Add the advantages of
wind and fire proof tanks constructed of
Air-Cell concrete staves for strength and
BONE DRY storage. Subtract high insurance
rates, less spoilage and waste . . . thanks to
safe, dependable Marietta tanks.

the result? A modern storage system that elim-
inates maintenance, provides permanent,
year 'round protection for all your bulk
materials requiring storage, lowers hand-
ling costs.

To learn how you can have a complete system designed and
erected to meet your needs, write or wire our nearest office.

THE MARIETTA CONCRETE Corp.

MARIETTA, OHIO

Branch Offices: Race Road and Pulaski Highway, Baltimore, Md.
Box 1575, Charlotte, N. C.

When inquiring check CP 9405 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Specifies non-sparking tools for explosive areas

Non-sparking safety tools are illustrated and described in four-page bulletin. Sizes are tabulated for various kinds of wrenches, chisels, scrapers, putty knives, screw drivers, hammers, shovels, pliers, and spatulas. Bul ST-5 is issued by Ampco Metal, Inc., Dept. CP, 1745 S. 38 St., Milwaukee 46, Wis. When inquiring specify CP 9406 on handy form, pages 2 and 3.

Comfort and protection combined in coated work gloves . . .

vinyl coat is flexible in cold and is non-tacky in heat, won't support combustion

Uses: Gloves protect hands against water, acids, and alkalis.

Features: Plastic coating stays flexible in extreme cold, but does not become tacky at temperatures usually encountered while working with the gloves. Gloves are tailored for comfort — seams are straight and there is no excess material in the finger crotches. Won't support combustion.

Description: All-purpose Plastik-Plated work gloves are available in fully coated styles, or with palm only coated (permitting ventilation through back). Choice is provided of smooth or rough finish, and knit wrist, 2" safety cuff, or 4½" gauntlet cuff. Plastic is vinyl.

(Product of Mine Safety Appliances Company, Dept. CP, Braddock, Thomas and Meade Sts., Pittsburgh 8, Pa. . . or for more information check CP 9407 on handy form, pages 2 and 3.)

Briefs methods of analyzing air pollution.

Methods that can be used to determine extent and nature of air pollution are detailed in the latest chapter of the "Air Pollution Abatement Manual," which is being published in serial form by the Manufacturing Chemists' Association, Inc.

Chapter seven, entitled "Analytical Methods," digests well-known and recently developed techniques of analysis, including chemical, physical, biological, and tracer methods. This chapter ends with a listing of over 140 references.

Copies may be obtained by remitting 35c direct to Manufacturing Chemists' Association, Inc., Dept. CP, Woodward Building, 733 15th St., N. W., Washington 5, DC. Or, for more information check CP 9408 on handy form, pages 2 and 3.



Other than a slight softening on surface of gloves, and discoloration, there was no apparent damage when red fuming nitric acid was placed in contact with gloves for 20 minutes in recent lab testing. Similar tests with 90% hydrogen peroxide resulted in neither damage nor discoloration



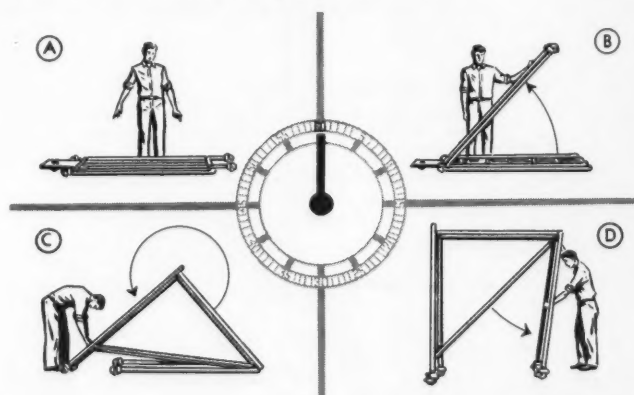
25 ft. "UP-RIGHT" SCAFFOLD-ON-WHEELS

Set up in only 5 minutes!

As if by magic, an aluminum alloy tower of any height desired is ready in minutes! Individual scaffold sections are set one on top of the other. Sections lock into place instantly. The tower rolls down aisles . . . straddles machinery.

HERE'S THE SECRET!...**Patented ONE-PIECE SECTIONS**

Each one-piece section is unfolded by one man in less than a minute! No tools, wing nuts or bolts.



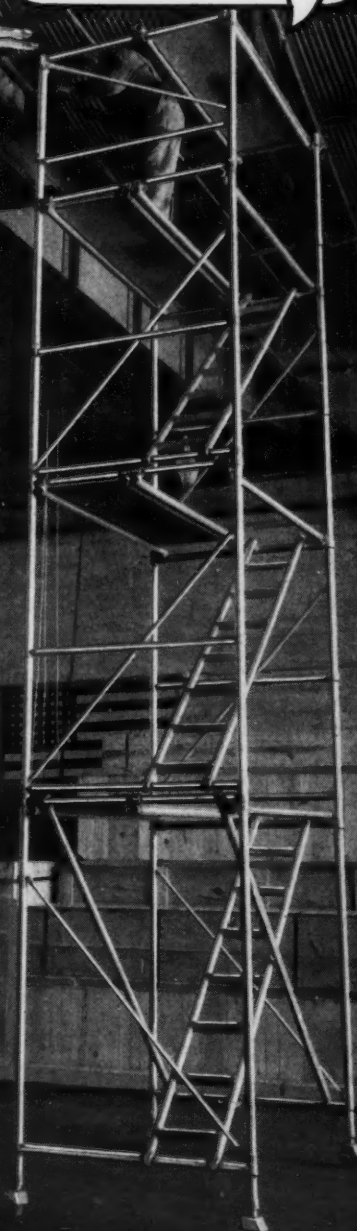
Your maintenance costs can be reduced by "UP-RIGHT" SCAFFOLDS

WRITE FOR DESCRIPTIVE CIRCULAR

OFFICES IN ALL PRINCIPAL CITIES

FACTORIES: BERKELEY, CALIFORNIA & TETERBORO, NEW JERSEY

"WE SAVED 48 MAN-HOURS on the 90 man-hour job of steamcleaning, re-wiring and painting an overhead crane at our South San Francisco plant," says Fred Reibin, Plant Engineer, Enterprise Division, General Metals Corp.



"UP-RIGHT" SCAFFOLDS
DEPT. 145 • 1013 PARDEE ST. • BERKELEY, CAL.



How Low is a HIGH VACUUM?

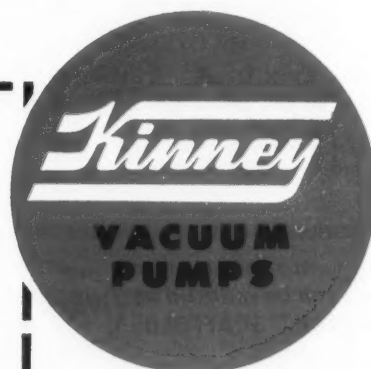
You can't measure a working vacuum by pressure alone because time also is a big factor in any vacuum processing operation. To provide these two essentials of high vacuum — (1) the required low absolute pressure (2) in the shortest possible time — is the job for fast, dependable Kinney High Vacuum Pumps.

Fast — Kinney High Vacuum Pumps have the ability to save processing time by speeding up the tempo of your vacuum operations.

Dependable — Kinney High Vacuum Pumps have the ability and stamina to produce the vacuum you need, whether it's measured in fractions of an inch of mercury or fractions of a micron.

Remember, there's a Kinney Pump for every vacuum requirement, from the midget 2 cu. ft. per min. pump to the new giant 1600 cu. ft. per min. model. Send coupon today for new Kinney Bulletin V-51B. KINNEY MANUFACTURING CO., Boston 30, Mass. Representatives in New York, Chicago, Cleveland, Philadelphia, Houston, New Orleans, San Francisco, Seattle, Los Angeles.

FOREIGN REPRESENTATIVES: Gen'l Engineering Co., Ltd., Radcliffe, Lancs., England • Horrocks, Roxburgh Pty., Ltd., Melbourne, C. I. Australia • W. S. Thomas & Taylor Pty., Ltd., Johannesburg, South Africa • Novelectric, Ltd., Zurich, Switzerland • C.I.R.E. Piazza Cavour 25, Rome, Italy.



KINNEY MANUFACTURING CO.
3573 WASHINGTON ST., BOSTON 30, MASS.

Please send new Bulletin V-51B. Our vacuum problem involves:

- | | |
|---------------------------------------------|----------------------------------------------|
| <input type="checkbox"/> Vacuum exhausting | <input type="checkbox"/> Vacuum distillation |
| <input type="checkbox"/> Vacuum dehydration | <input type="checkbox"/> Vacuum metallurgy |
| <input type="checkbox"/> Vacuum coating | <input type="checkbox"/> Vacuum research |

Name..... Company.....

Address.....

City..... State.....

SAFETY

Lift trucks save \$750/month in damage claims

Presented in four-page bulletin is a case study of the job performed by four 2000-lb capacity lift trucks in a trucking terminal. Chief results cited are that loading time per trailer was cut 50%, breakage of bagged goods was reduced 90%, and \$750 per month was saved in damage claims.

Six illustrations are used to demonstrate some of the tasks performed by these trucks. Two particular shots show how trucks help maintenance of company's carriers by lifting out engines, rear ends, and transmissions; spotting trailers for repairs; and lifting the rear ends of truck bodies for under-carriage repairs. Job Study 111 is issued by Towmotor Corp., Dept. CP, 1226 East 152nd St., Cleveland 10, Ohio. When inquiring specify CP 9410 on handy form, pages 2 and 3.

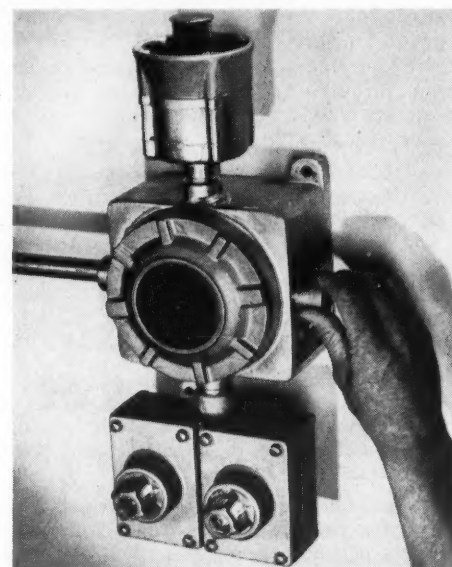
Checks surrounding air against dangerous build-up of explosive vapors . . .

standard alarm point is established at 0.2 of lower explosive limit; other values can be provided

Uses: Pipeline pumping stations, gas plants, industrial and commercial areas where gas or volatile liquids are used, stored, or handled. Unattended stations are particularly indicated.

Features: Electronic chassis is designed for quick and easy removal. Sensing unit can be located remotely from rest of alarm if desired. Either self-reset or lock-in arrangements can be provided to give a choice between an on-off indication of gas, or one which must be manually reset.

Description: Completely AC operated, the Model EE Combustible Gas Alarm subjects the surrounding atmos-



Unit is designed for rough-service locations

phere to a continuous watch against the build-up of explosive vapors. Located in a bell-shaped cover housing (at bottom in the photo), the sensing unit is weather-proof and signals the presence of dangerous vapor concentrations by a red indicator light as well as remote alarm units of

CHEMICAL PROCESSING

When inquiring check CP 9409 on handy form, pgs. 2-3

HERE'S REAL PROTECTION

plus long-wearing
economy

Sawyer protective
clothing is

- *Highly resistant to all common chemical solutions
- *Not affected by grease, oil or gasoline
- *Positively will not crack, blister or peel

All Sawyer protective clothing is made with top quality base fabric saturation-coated with 6 coats of genuine DuPont Neoprene Latex*. It's tough as mulehide, too . . . takes endless rubbing, scraping, snagging and still gives full protection.

Also: Three-quarter and long coats, coveralls, aprons and many other styles. All clothing made in black and yellow.

Styles
illustrated
527 Jacket
528 Pants
557 Hat



*Sawyer fabrics are coated by
The Brunswick Company, a division of

**THE H.M. SAWYER
& SON CO.**

FROG BRAND

CAMBRIDGE
MASSACHUSETTS

When inquiring check CP 9411
on handy form, pgs. 2-3

FEBRUARY, 1952

SAFETY

various types which can be connected to the terminals provided.

Designed for rough-service locations, the alarm contains no meters or meter-type sensitive relays but utilizes an electronic trigger-tube circuit to convert the sensing unit signals into alarm indications. Stand-by power consumption from 115 v line is 15 w.

While the standard alarm point is established at 0.2 of the lower explosive limit, other values can be provided where required.

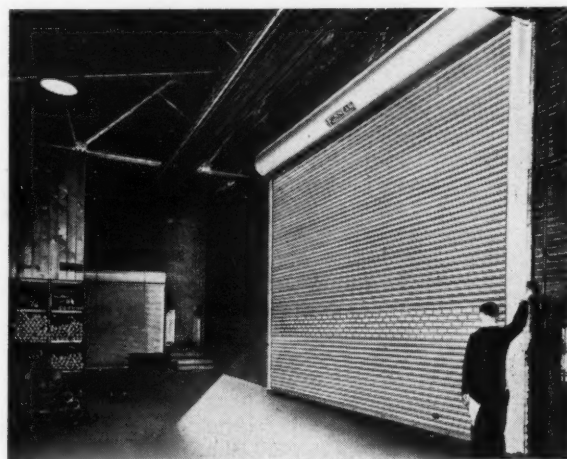
(Model EE Combustible Gas Alarm is available from Johnson-Williams Ltd., Dept. CP, 2725 Third St., Palo Alto, Calif. . . . or for more information check CP 9412 on handy form, pages 2 and 3.)

Plastic lookout windows built into slat-type, steel rolling doors . . .

provides safety factor against intruders, and light in areas that otherwise might be dark

Uses: Window area in rolling door provides daylight; also, protection to buildings from access by unauthorized persons.

Description: Narrow, transparent panes of heavy-duty plastic are available in one or more of the interlocking steel slats of Kinnear Rolling Doors. These "window slats" are built in, at, or near eye level to permit anyone inside a building to scrutinize persons on the outside before opening the door. Also, they allow entry of day-



light through the door—thereby helping to prevent accidents to personnel moving about in doorway areas that otherwise might be dark.

Kinnear Rolling Doors, themselves, are constructed of open-hearth steel interlocking slats, heavily galvanized, and equipped with endlocks to maintain alignment. Metal curtain travels in steel guides and coils upon a barrel journaled in heavy-duty brackets. Counter-balancing is provided by helical springs, which are enclosed within the barrel.

The doors can be equipped for operation manually, mechanically, or by motor, with remote control from any number of electric pushbutton stations.

(Obtainable from Kinnear Manufacturing Co., Dept. CP, Columbus, Ohio . . . or for more information check CP 9413 on handy form, pages 2 and 3.)

GRAVER

can eliminate all these
impurities from
water...

Are any of these impurities causing
plant shut-downs . . . equipment fail-
ures . . . high production costs?

Graver can eliminate any or all of these
impurities from your water supply . . .

. . . because Graver manufactures
every type of water treating equipment
. . . hot and cold process softeners . . .
cold and hot zeolite softeners . . . de-
mineralizers . . . deaerating heaters . . .
filters . . . chemical feeders . . . combi-
nation systems.

. . . because Graver brings complete
research, laboratory, pilot plant, pro-
cess development, equipment designing,
manufacturing and erection facilities
to bear on the solution of individual
water-treatment problems.

. . . because Graver has a 40-year
record of pioneering in the advance of
water-treatment processes and the de-
velopment and improvement of water-
treating equipment.

. . . because Graver has many thou-
sands of successful installations to
prove the correctness of Graver recom-
mendations and the effectiveness of
Graver processes and equipment.

Graver provides authoritative advice
on the most modern proven methods
and designs for solving your particular
water treating problem. Send sample
of your raw water supply for free
analysis and recommendations with-
out obligation.

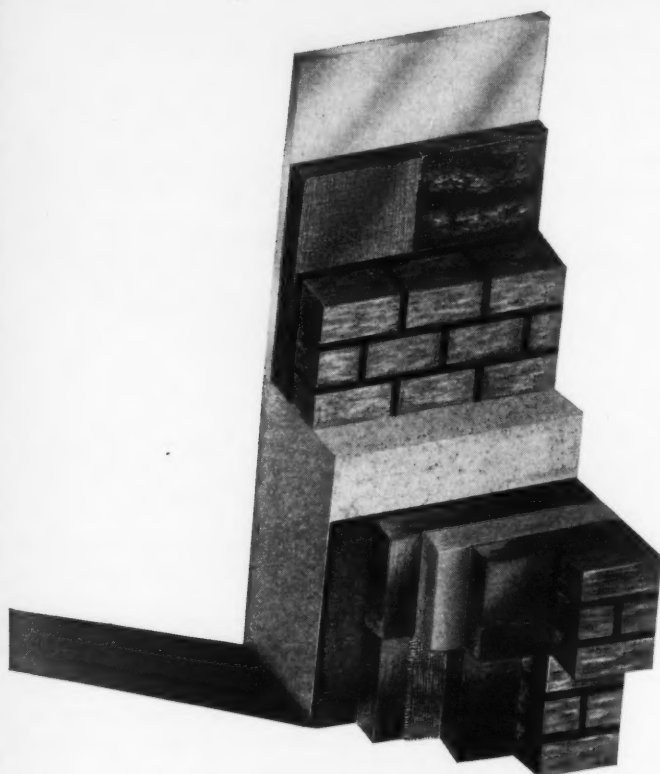
GRAVER

GRAVER WATER CONDITIONING CO.

Division of Graver Tank & Mfg. Co., Inc.
216 WEST 14TH STREET, NEW YORK 11, N. Y.

GW4342

When inquiring check CP 9414 on handy form, pgs. 2-3



in CORROSION-PROOF LININGS... there is no substitute for ATLAS experience

Portrayed above are a number of ATLAS lining constructions for use on steel or concrete. Each has definite applications where it will give you the best service obtainable for your operating conditions.

ATLAS engineers have always recognized that there is no one lining material or construction best for all applications. Accordingly, for sixty years they have accumulated intensive laboratory and practical field data pertaining to most known corrosives. Over this period, they have developed materials which individually or in combined constructions offer the best long-term resistance.

Knowing the corrosives involved, processing temperatures and other conditions, the ATLAS Technical Service will recommend specific materials and constructions for your application. They will tell you as plain facts what ATLAS materials will and will not do.



INFORMATIVE DATA on ATLAS products will gladly be sent to you.

Corrosion-proof LININGS . . . Bulletin 4-2

Corrosion-proof CEMENTS . . . Bulletin 5-2

Corrosion-proof COATINGS . . . Bulletin 7-2

ATLAS PRODUCTS STAND
...between your process
and corrosion



MERTZTOWN
PENNSYLVANIA
HOUSTON 1, TEXAS

Corrosion-proof: Cements—Coatings—Vessel Linings

When inquiring check CP 9415 on handy form, pgs. 2-3

SAFETY

Emergency floodlight adjustable in any direction . . .

has own battery or can be plugged into 110 v AC outlet

Uses: Emergency light source.

Features: Adjustable in any direction; portable.

Description: Automatic emergency light, GS No. 16, can be plugged into any 110 v AC outlet (DC model available). If there should be any interruption in the power, the GS No. 16 will come on instantly and automatically, from power supplied by dry



battery. Light clamps on to a standard 6 or 7½ volt dry battery.

(Obtainable from General Scientific Equipment Co., Dept. CP, 2700 Huntingdon St., Philadelphia 32, Pa. . . or for more information check CP 9416 on handy form, pages 2 and 3.)

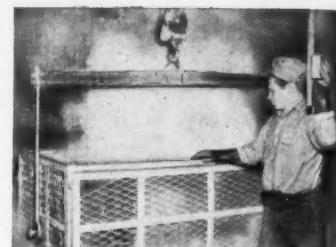
Fire fighting products and chemicals

Three-color, 12-page catalog contains illustrations and descriptions of fire extinguishing equipment and chemicals. Products listed include various types of nozzles, liquid foam materials and pipe extensions. Cat CP-7-50M-51 is issued by Rockwood Sprinkler Co., Dept. CP, 38 Harlow St., Worcester 5, Mass. When inquiring specify CP 9417 on handy form, pages 2 and 3.

78% reduction in hand injuries plus 6¢ per man-hour saved

CASE NO. 207

Problem: High percentage of hand injuries from cuts, acid and heat burns and infections, in plant employing over 1000 men to shear, form and dip-coat sheet steel products. Canvas and neoprene gloves quickly cut or tore, replacement costing over 10¢ per man-hour on many operations.



Solution: Change-over to heavy NEOX (reinforced neoprene) coated gloves for work with hot metal and acid solutions, and gloves with natural rubber coated palms and thumbs for handling sharp-edged dry sheets. Reduced hand injuries 78%. Gloves also wore 3 to 5 times longer, averaging saving of 6¢ per man hour.

Plastic, Natural Rubber and NEOX (Reinforced Neoprene)



Edmont
COATED FABRIC
GLOVES

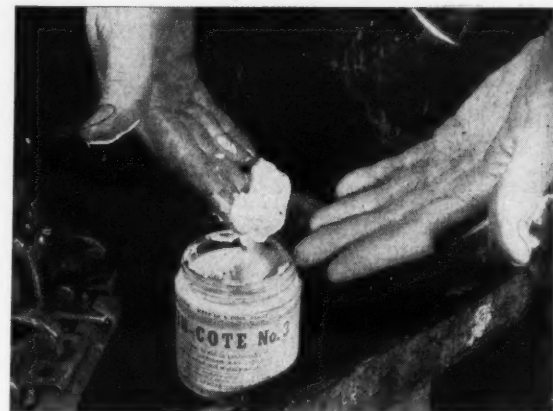
Safe hands cut costs 5 ways

- 1: Fewer lost time accidents
- 2: Faster, surer work handling
- 3: Less spoilage
- 4: Improved job attitude
- 5: 40% to 70% savings in usual glove costs to company or employees.

Send description of your problem. We will supply free test samples.

Edmont Manufacturing Company
1204 Walnut St., Coshocton, Ohio
World's largest maker of coated industrial gloves

When inquiring check CP 9418 on handy form, pgs. 2-3



The Answer to INDUSTRIAL DERMATITIS is just as simple as this

. . . in some of the even larger plants, they have found that by using only two types of Skin-Cote, they get complete protection and have reduced dermatitis to one of their minor hazards . . . to a problem of simply seeing that the employees use it. To encourage the use of Skin-Cote, more and more companies are supplying it in individual jars rather than issuing it from *bulk containers in the tool crib . . . Send for eight page catalog and complete information — you will find that the answer to Industrial Dermatitis can be as simple as this.

*Available in individual jars or bulk containers.

The BOYER-CAMPBELL Company
6548 St. Antoine Safety Division Detroit 2, Mich.

When inquiring check CP 9419 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Illustrates over a dozen different type fans

Wide range of ventilating fans, air circulators, belt driven exhaust fans, floor and window fans, spray booth fans, etc., are specified in 23-page catalog. Over a dozen illustrations cover the various types. "Standard Electric Fans" is issued by Standard Electric Mfg. Co., Dept. CP, West Berlin, N. J. When inquiring specify CP 9420 on handy form, pages 2 and 3.

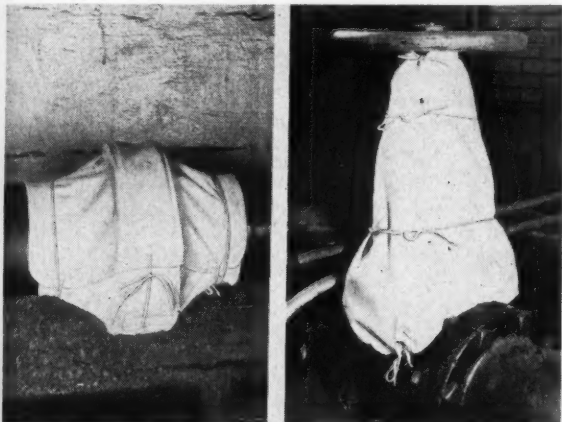
Acid and caustic resistant covers for valves and flanges protect against leaks . . .

Dynel fabrication fits all sizes and styles and permits complete operating freedom

Uses: Provide protection against leakage resulting in valves and flanges and at the same time provide complete operating freedom.

Features: Covers are stated to have sufficient strength to contain sprays resulting from gasket or packing failures in pressurized lines. This feature is important to the safety of workers in the immediate area of such lines.

Description: Made of Dynel, MSA ChemKovers are designed to fit all styles and sizes of valves and flanges. Dynel is particularly acid and caustic resistant; it will not



Left view shows double duty flange cover. Right photo demonstrates operating freedom of covered valve

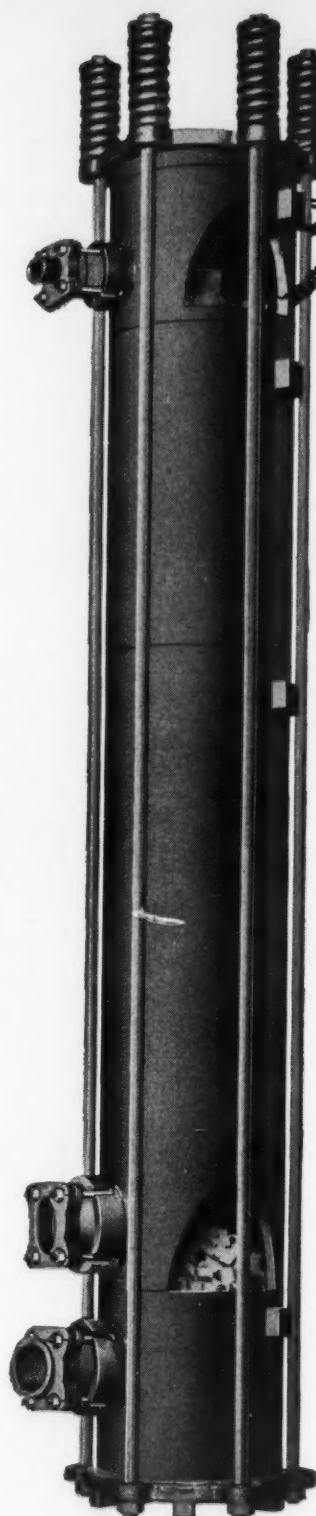
support combustion and is easily cleaned for reuse.

ChemKovers require no special tools for installation and can be removed speedily when lines require repair.

(Manufactured by Mine Safety Appliances Co., Dept. CP, Braddock, Thomas and Meade Sts., Pittsburgh 8, Pa. . . . or for more information check CP 9421 on handy form, pages 2 and 3.)

1952 catalog of pocket-size technical data books

Catalog is an index to publisher's pocket-size Dollar Technical Data Books. Over 2000 subjects are listed in this 1952 edition including: hydraulics, piping data, metallurgy, analytical chemistry, AC motors and generators, chemical tables, mechanical drawing, trig-log tables, and many others. "Lefax 1952 Technical Data Catalog" is issued by Lefax Publishers, Dept. CP, Philadelphia 7, Pa. When inquiring specify CP 9422 on handy form, pages 2 and 3.



**I'M GETTIN' OUTA
HERE - FAST!**

Banish Corrosion with "KARBATE" BRAND Impervious Graphite Towers

"KARBATE" TOWERS do more than retard corrosion — they eliminate it *entirely* from such processing operations as absorption, fractionation, evaporation, extraction, scrubbing, and many others. Furthermore, the widespread acceptance of impervious graphite for all types of corrosion-free process construction has resulted in the manufacture of monolithic tower sections and fittings in sizes to 24" I.D.

For example, the tower illustrated here incorporates the following standard components: *bottom section* with gas inlet, liquor outlet and support grill; *intermediate section* with hand hole and packed with carbon Raschig rings; *short intermediate section*; *top section* with "Karbate" feed assembly and wier plate distributor; and *cover* with gas outlet. All sections and fittings, including spring-loaded tie rods and heavy-steel pressure plates, are available for quick assembly to your specifications.

All openings are of adequate size. Generous gas-liquid disengaging space is provided in the top and bottom sections.

"Karbate" Impervious Graphite is in widespread use today. The increasing demand for corrosion-free processing equipment indicates that it will be the universally preferred construction material of tomorrow. For *only* impervious graphite can give you this unique combination of properties:

- STRENGTH AND EASE OF INSTALLATION
- HIGH HEAT CONDUCTIVITY
- SIMPLICITY OF FABRICATION AND MODIFICATION IN THE FIELD
- RESISTANCE TO CORROSION AND THERMAL SHOCK
- NON-CONTAMINATION

The term "Karbate" is a registered trade-mark of Union Carbide and Carbon Corporation

NATIONAL CARBON COMPANY

A Division of Union Carbide and Carbon Corporation

30 East 42nd Street, New York 17, N. Y.

District Sales Offices: Atlanta, Chicago, Dallas, Kansas City, New York, Pittsburgh, San Francisco

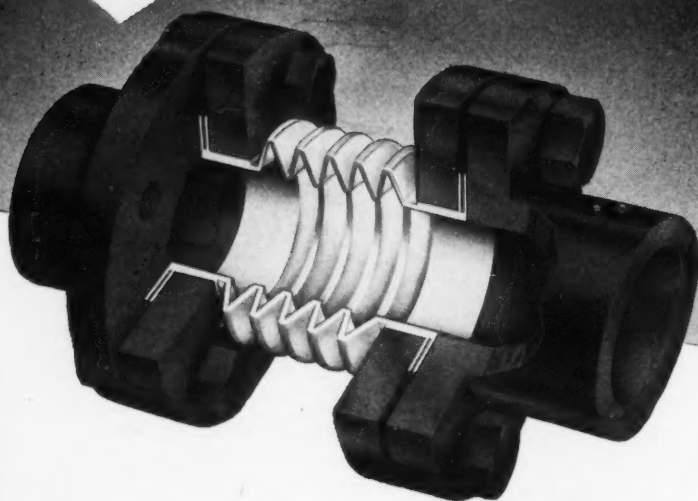
In Canada: National Carbon Limited, Montreal, Toronto, Winnipeg

OTHER NATIONAL CARBON PRODUCTS

HEAT EXCHANGERS • PUMPS • VALVES • PIPING • TOWERS • TOWER PACKING • BUBBLE CAPS • BRICK • STRUCTURAL CARBON • SULPHURIC ACID CUTTERS • HYDROCHLORIC ACID ABSORBERS

When inquiring check CP 9423 on handy form, pgs. 2-3

NEW...TEFLO BELLOWS CONNECTOR



- CORROSION RESISTANT
- HEAT RESISTANT
- ELECTRICALLY NON-CONDUCTIVE
- FLEXIBLE EVEN AT MINUS 94° F.
- AS STRONG AT 482° F. AS AT 70° F.
- NON-ABSORBENT

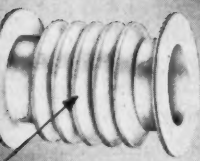
The answer to difficult piping problems in your plant

Here is the new "JOHN CRANE" Teflon Bellows Type Connector which will solve many problems in the chemical industry. Fabricated of chemically inert Teflon, it economically serves as a vibration dampener as well as an expansion joint—connects misaligned couplings. The unusual properties of Teflon allow the expansion joint to be flexed repeatedly without damage.

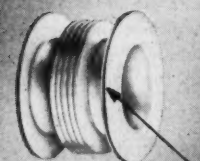
End flanges of the joint are actually French-type envelope gaskets made integral with the joint for simple assembly between companion flanges . . . insures a tight, leak-proof seal on installations. John Crane Bellows Connectors are made to your specifications in a wide range of sizes to fit your particular needs.

Consult with "JOHN CRANE" engineers now on the uses of remarkable new Teflon in effectively handling corrosive liquids and gases.

Write for informative catalog on Teflon and its applications.



Maximum expansion and contraction provided.



French-type gasket provides easy installation.



Thousands repeated flexing without damage.



CRANE PACKING COMPANY
1821 CUYLER AVENUE • CHICAGO 13, ILLINOIS
Offices in All Principal Cities in United States and Canada



When inquiring check CP 9424 on handy form, pgs. 2-3

Expanding Chemical Production



Begin \$13-million expansion at Dow Corning Corp.

Construction estimated at more than \$13-million is now under way for expansion of silicone-product plant capacity of Dow Corning Corp., Midland, Mich. Program is scheduled for completion by 1954 and is the third and largest expansion of the company since construction of its initial plant in 1944.

During the last war, production was confined to a few materials with essential military uses. Since then, line of products and productive capacity have been expanded to meet industrial demands for silicones.

Investment required for the present expansion program is being made under four certificates of necessity. One, for \$10,194,000, has been recently approved by DPA and provides for substantial chemical production facilities and for general plant services to make basic silicone fluids and resins.

Three other certificates recently approved represent the following investments by the company: 1) \$560-thousand for a plant to produce metallic silicone, 2) \$820-thousand to build methyl chloride plant, and 3) \$1,460,000 for a plant to produce Silastic; Dow Corning's silicone rubber.

Lithium carbonate from California brine

All crude lithium salts recovered from the brine of Searles Lake is being processed for sale as lithium carbonate at American Potash & Chemical Corporation's new plant in Trona, Calif. First shipments went out in December 1951.

Carbon disulfide made in electrothermal furnace

New carbon disulfide manufacturing facilities costing more than \$500,000 are nearing completion at the plant of the Taylor Chemical Division, J. T. Baker Chemical Co., Penn Yan, N. Y. Focal point of the new equipment is a \$100,000 electrothermal furnace, an addition to three other furnaces now in use. In this furnace, molten sulfur and lump charcoal react to form carbon disulfide. Disulfide is stored under water, then transferred to tank cars and drums by displacement with water. Sulfur in waste gases will be recovered.

The Penn Yan expansion is part of Baker's \$3-million modernization program started in 1950 and scheduled for completion this year.

Hercules Powder plans chemicals by hydrocarbon oxidation

Hercules Powder Company recently announced plans for erection of an \$8-million plant for production of phenol, para-cresol, and acetone by a unique new process of hydrocarbon oxidation. If all goes well, the plant should be producing some time in 1953. Phenols will be made from aromatic hydrocarbons, and cresols from terpene

hydrocarbons. Raw materials are from petroleum refineries or from the River industrial section), and operations in Georgia and

Unlike existing processes, these do not consume sulfuric acid. Peroxides are produced and these are readily converted to phenols and phenolic materials, can be produced in a single operation.

M. W. Kellogg adding 50,000 sq. ft. to research facilities

The M. W. Kellogg Company is adding 50,000 sq. ft. to its large petroleum and chemical research facilities by some 50%, thereby providing special research programs for the next 10 years ago, not only for plant work (on both products and processes) but also conducting investigations in the labs played an important role in the development of Kel-F plastic into

Added capacity planned for UCC polyethylene plant

Construction of expanded polyethylene plant at the Texas City Chemicals Company, a subsidiary of Carbon Corporation, scheduled for completion by early 1953 is slated for \$1 million per year. New construction is on an eight-acre plot.

Resin made—by direct polymerization at high pressure—will be used for such as Bakelite Company

More chlorine and caustic soda for Northwest

Hooker Electrochemical Company is beginning a \$5 million construction program at its Tacoma, Wash., plant to increase soda output for the Northwest. Dredging work for deep-water facilities for

NU to get second laboratory for catalysis, pressure studies

The second high-pressure laboratory in honor of Dr. V. N. Ipatov is being built on the campus of Northwestern University. Construction of the 49 x 11 x 11 ft. building by late summer. Most of the equipment has been built by University department machine shop, loaned by Universal Oil Products

Equipment will have the latest controls. Compressors and pumps or more will be used to study the behavior of chemical reactions at various pressures and temperatures. Various catalysts.

CHEMICAL PROCESSING

FEBRUARY, 1952

materials will be obtained from
or coke ovens in the area (Delaware
on), and from Hercules naval stores
a and Mississippi.

esses for making phenol, this method
sulfur or chlorine. Organic hydro-
ced in the basic intermediate step;
converted to phenols. Substituted
c materials, depending on starting
duced with minor equipment modi-

ing 50%

Company is expanding its already-
chemical research labs in Jersey City
by providing additional facilities for
grams. These labs, established thirty
go into applied research and pilot
n products and processes), but are
estigations in pure research. The
stant role in bringing fluid hydroform-
into the industrial scene.

nned for
plant

anded facilities for making poly-
s City plant of Carbide and Carbon
, a Division of Union Carbide and
, should be starting soon. Produc-
slated, at rate of 50-million pounds
struction includes three new buildings

rect polymerization of ethylene at
e further compounded by companies
npany, another UCC division.

ustic

ical Company has announced that it
million expansion program. A large
n has been started at the company's
it to increase its chlorine and caustic
e pulp and paper industries of the
ing will soon be underway to provide
s for shipping products by barge.

laboratory for
udies

ssure and catalytic laboratory named
ipatieff will be built on the Evanston
stern University. It is hoped that
9 x 17 foot building will be complete
Most of the special lab equipment
University personnel in the chemistry
shop. Many of the blueprints were
Oil Products.

the latest safety devices and remote
ors capable of creating 1000 atmos-
l be used in fundamental research
chemical compounds under various
peratures, and in the presence of

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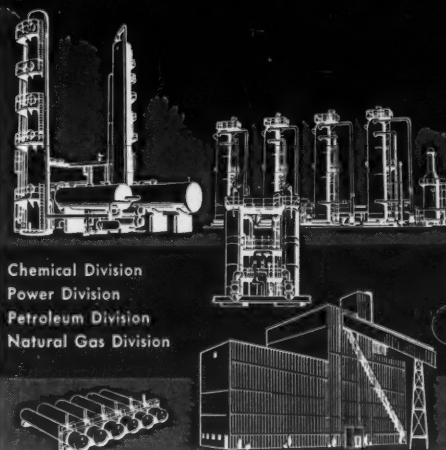
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When inquiring check CP 9425 on handy form, pgs. 2-3

Page 159

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UMI

Chemical expanding California NH₃ plant

Increased demands for ammonia by industry and agriculture on the Pacific Coast have been responsible for the planning of substantial expansion of Shell Chemical Corporation's synthetic ammonia plant at Shell Point, near Escondido, Calif. Operation of the expanded facilities should be rolling by spring.

Consalt to increase capacity 110%

Scheduled for completion early in 1953, new facilities added to the Wyandotte works of Pennsylvania Salt Mfg. will up their synthetic anhydrous ammonia production capacity about 110%. Using the Casale process, a high-pressure system developed in Italy, the new unit will use product hydrogen from electrolytic chlorine-caustic production and nitrogen obtained from air separation. Estimated cost is \$2,200,000; engineers-constructors will be Foster-Wheeler Corp.

Expanded research set Koppers

An enlarged and more unified program of research is being planned by Koppers Company, Inc. A major portion of the investigative work will be centered at Allentown, Pa., where new laboratories are now nearing completion. The new modern facilities will have plenty of room for pilot plant studies; as many as ten miniature industrial plants may be in operation at the same time. A large area will be devoted to pilot plant work in chemicals, another in fuels, and a third in testing and moving large machinery made by Koppers (such as electronic precipitators). A pilot plant now in the planning stage will make gasoline and oil from coal by hydro-treatment, using powdered coal in a slurry as feed.

New facilities should enable Koppers to probe more deeply into coal chemicals, plastics, resins, wood preservatives, and metal products. They will also help in examining new fields of endeavor. A considerable number of fellowships will be retained at Mellon Institute. Work will be primarily in the field of basic rather than applied research.

Eastman starts Longview chemical plant

Tennessee Eastman made a big step toward raw-material self-sufficiency last month when Texas Eastman started up a plant near Longview, Texas. Both companies are divisions of Eastman Kodak Company. The Texas plant enables Tennessee Eastman to get away from using coal as a raw material for production of acetic acid, acetic anhydride, butyric acid, and butyric anhydride, in the manufacture of Eastman cellulose esters and other chemicals.

The plant uses propane, natural gas, and carbon dioxide as raw materials. Normal and iso-butyraldehyde are produced by reacting a carbonmonoxide-hydrogen synthesis gas with propylene by the modified Oxo process. The ethylene is made by thermal cracking of propane, which produces ethylene, stepping stone to ethanol. Synthesis gas is made by high-temperature cracking of natural gas, carbon dioxide and steam; hydrogen is also

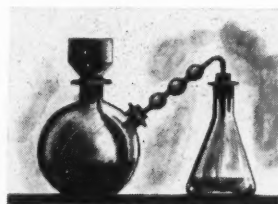
What's the biggest concentration headache you've got?

Pass it along to us. We think we can help you lick it.

Many industries have come to Carrier with problems involving low temperature refrigeration. And together we worked out applications that improved both the process and the product. Often the process called for the evaporation of water from food products, or of solvents from chemicals, where temperatures of process or product were critical.

We bring this up to remind you that Carrier's experience in industrial refrigeration has been close and varied.

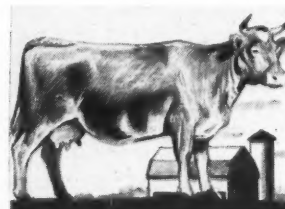
And, of course, Carrier's experience in the heat transfer business has paced the field for years.



So it was natural for these combined skills to bring us into the evaporation and concentration business.

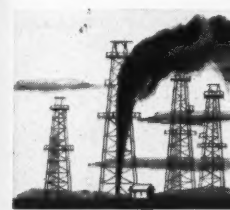
Carrier experts in refrigeration and heat transfer, together with engineers long experienced in evaporator design, developed the new Carrier Concentrators.

The Carrier Concentrator is a high vacuum, low temperature unit. It puts Carrier skill and experience to work in the concentration of products for the juice, milk and food industries . . . the pharmaceutical, chemical and petroleum industries . . . along with many others.



Doesn't it make sense to bring your concentration problem to experts who have a solid background in evaporation

and concentration both, in your industry? We think so.



THE CARRIER CONCENTRATOR

It gives you your choice of evaporation together with absorption or an absorption refrigeration best balances your

Carrier

AIR CONDITIONING

REFRIGERATION



both, as well as in other processes within
think it does.



Maybe you have an immediate problem the Carrier Concentrator can solve. Maybe you just want to find out how it fits into the job you're doing. Either way, why not write us?

• • •

CONCENTRATOR is best because:

your choice of one, two or three effect
with either a centrifugal, reciprocating
refrigeration cycle — whichever comes
your investment and volume.

Its low pressure construction and low film temperature cut operating costs and clean-up time, keep insurance rates and fabrication costs low.

Its packaged refrigeration cycle needs no refrigerant piping.

Its refrigeration cycle is separate from your evaporation plant: you can put it where it best fits in with the rest of your installation.

Where necessary, stainless steel is used on all parts in contact with the product.

You can sterilize the equipment either chemically or by steam, whichever your product may require.

And there are many other features which combine to give you the lowest possible first and operating costs plus the highest possible quality of product.

We'd like to send you additional information. Write us. Carrier Corporation, Syracuse 1, New York.

ATION INDUSTRIAL EQUIPMENT

When inquiring check CP 9426 on handy form, pgs. 2-3

EXPANDING PRODUCTION

obtained here for conversion of the aldehyde to their respective alcohols.

Ethylene is converted to ethanol by process that does not require scarce sulfuric acid. Actually the alcohol units will not be ready until April. Ethanol eventually produced will be shipped to Kingsport, Tenn., for conversion into acetic acid, acetic anhydride, and solvents such as ethyl acetate and isopropyl acetate.

N-butylaldehyde production will be split three ways: a portion to be sold as the aldehyde, a portion shipped to Kingsport where it will be converted to alcohol for use in manufacturing cellulose acetate butyrate and Tenite plastic, and a portion converted to 2-ethyl-hexyl alcohol for use in manufacturing dioctyl phthalate in Kingsport. Iso-butylaldehyde production will also be split three ways: one part to industry as the aldehyde, another part converted to the alcohol, and a third part converted to the acetate.

Reynolds Metals contracts for Texas alumina plant

Contract for a \$42 million alumina plant in San Patricio County, Texas, has been executed between Reynolds Metals Company and C. F. Braun & Co. The plant, which should be completed by January 1953, will produce about 1000 tons per day. It will be built adjacent to an aluminum reduction plant now under construction, and will process bauxite shipped direct from Jamaica by water. Reynolds Jamaica Mines, Ltd., a subsidiary, is developing the rich bauxite deposits in Jamaica which will be ready for shipment this year.

Two synthetic fiber plants in construction phase

The Chemstrand Corporation is engaged in construction of its headquarters building, research and development center, and Acrilan acrylic fiber manufacturing facilities on a 700-acre site at Decatur, Ala. At the same time, the company is building a nylon filament yarn plant on a 2000-acre site along the Escambia River, north of Pensacola, Fla. The Acrilan plant should be producing by the spring of this year, and should reach its rated annual capacity of 30 million pounds by the end of the year.

The nylon yarn plant won't be in commercial production until sometime in 1953, but it will really pour it on once it gets going: design capacity is 50 million pounds per year. Chemstrand was licensed by E. I. du Pont de Nemours & Company, Inc., to produce and market the filament yarn. Du Pont is designing and building the plant.

FMC penetrates deeper into chemical industry

Recent purchase of Buffalo Electro-Chemical Co. by Food Machinery and Chemical Corp. adds significantly to FMC's growing chemical empire. Buffalo Electro-Chemical's products have been hydrogen peroxide and other "per" compounds. FMC entered the chemical field in 1943 when it acquired Niagara Sprayer and Chemical Co. (dusting machines, insecticides, fungicides, and industrial sulfurs). Later additions were Westvaco Chemical Corp. (chlorine and caustic) in 1948, and Ohio-Apex Co. (plasticizers and other chemicals) in 1951.

Here's
How

Courtaulds (Canada) Limited
1... Cut building
and machinery
foundation costs
2... Obtained better
plant layout



Installed on the mezzanine floor at Courtaulds (Canada) Limited are 15 large compressors and vacuum pumps, all supported on special Korfund steel spring vibration isolators. This view of a portion of the mezzanine shows the method of mounting this battery of I-R and York equipment.

...by controlling vibration

For best plant and machinery layout, and for lowest construction costs, Courtaulds and its engineers, Robert A. Rankin Co., wanted to construct a new building in a central location—with this heavy equipment on a mezzanine floor. Since this rayon plant is almost completely automatic in operation, however, they had to be absolutely certain that no transmitted vibration would upset delicate electronic controls.

Korfund engineers designed special spring-isolated bases for the pumps and compressors, and Courtaulds was able to place them on the mezzanine with no disturbance transmitted to other floors or to electronic controls.

Courtaulds saved the extra cost of piling for each foundation which would have been necessary for the usual basement installation, and obtained better plant layout. In fact, Courtaulds reported that Korfund isolators more than paid for themselves in reduced construction costs alone.

For less exacting installations, there are standard stock Korfund isolators. A selector chart in Bulletin G-104 gives recommendations for both normal and critical conditions, for pumps, compressors, centrifuges, machine tools, presses, lathes, and most other processing and mechanical equipment. See Sweet's Catalog Files, or write us for your free copy today.



When inquiring check CP 9427 on handy form, pages 2-3

EXPANDING PRODUCTION

Pilot plant will study coal conversion

Pittsburgh Consolidation Coal Company has awarded contract for a large pilot plant for partial conversion of coal, using the coal company's recently developed low-temperature carbonization process. Plant will be built by Blaw-Knox, Chemicals Plants Division, at the company's research center in Library, Pa., and should be completed by fall of 1952.

Besides providing cost and design data for a commercial plant, the pilot unit will supply sufficient amounts of many chemical products and special carbons for commercial evaluation. The products include a high-Btu solid fuel, and low-boiling tar acids and creosotes.

Stauffer Chemical to build in Louisville

Stauffer Chemical Company will be making anhydrous hydrogen chloride, carbon tetrachloride and perchlorethylene in new Louisville, Ky., plant now in planning stage. Stauffer-developed process—chlorination of a hydrocarbon gas—will be used. Other organics can be made with slight process variation; plant site will accommodate expansion into these as demand develops. The hydrogen chloride is slated for local manufacture of neoprene, and the carbon tetrachloride for manufacture of Freon, aerosols and other products.

Ethane recovery plant will sell alcohol, ethyl chloride

Primary purpose of the \$32 million plant being built near Tuscola, Ill., for National Petro-Chemicals Corporation is recovery of ethane from natural gas transported through the Panhandle Eastern pipeline system. The recovered ethane will be converted into ethylene from which synthetic industrial ethyl alcohol and ethyl chloride will be produced. During recovery, however, other valuable hydrocarbons will be obtained: propane, butane, isobutane, and a small amount of natural gasoline. Construction plans will allow future product expansion and diversification.

The extraction and fractionation sections of the plant should be recovering ethane and other hydrocarbons by October of this year. Chemical sections should be turning out ethyl alcohol and ethyl chloride by the spring of 1953.

National Petro-Chemicals was formed in June 1951 by National Distillers Products Corporation and Panhandle Eastern Pipe Line Company on a 60-40 participation basis.

Industry can expect more lithium and compounds

Increased demand for lithium and its compounds has prompted Lithium Corporation of America, Inc., to start a \$425,000 overall expansion program. First step is construction of a new type flotation mill for recovering spodumene concentrates from company-owned ore deposits in South Dakota's Black Hills area. Second step is enlargement of existing facilities at the company's Metalloy Corporation Division plant in Minneapolis. The plant produces lithium metal and compounds. Industry should feel the effects of expansion early this year.



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When inquiring check CP 9428 on handy form, pgs. 2-3

CHEMICAL PROCESSING

NEW LITERATURE

Spheroidal form shows low pressure

Topic of 16-page bulletin. Features cited permits more uniform bed than that obtained of comparable size. minimized because relatively large as applied in the 30 to 40 mesh

Because of comparative with low pressure drop wide latitude in the design is stated that depth of sign and operating to change abilities of the is the most usual. T in the operating flow per square foot having capacity.

Graphical and other properties, physical speed of anion removal exchange capacity. S resin under various Aluminate Corp., Dept. 38, Ill. When inquiring pages 2 and 3.

Regulating valve with large cutaway

Large cutaway illustrating valve is highlighted. Arrows point out five interchangeable, making valve by changing the can be readily converted regulation. Bul 700 pany, Inc., Dept. CE specify CP 9430 on

Describes vacuum impregnating system

Four-page bulletin describes systems and explains are discussed, and n by drawings. A list included. Last page impregnation of el lumber, leather, and Process Industries En Pa. When inquiring pages 2 and 3.

Synthetic wax preservative in four pages

Four-page data bulletin characteristics of a mixture of the palmitic acids, and is like product. "Emer by Emery Industries cinnati 2, Ohio. W handy form, pages 2

Form exchange resin Pressure drop

The bulletin is a highly basic anion exchange catalyst. It includes its spheroidal form which provides uniform water distribution through exchanger obtainable with irregularly shaped particles of uniform size. Also, bed packing and channeling are eliminated by use of form. Surface area provided is approximately 93% of the particles fall within the mesh size range.

Comparatively rapid rate of exchange coupled with low pressure drop through bed, use of resin permits the choice of an optimum bed depth. It is a problem of equipment design technique rather than a limitation of the exchange of the resin. A range of 30 to 60 inches of bed depth is available. Tabulated material shows that variation in flow rate of 2.5 to 15 gallons per minute have no significant effect on exchange.

Other data in bulletin deal with physical and chemical stability, pressure drop, removal and effect of regenerant level on capacity. Sample calculations show capacities of various loads. Bul 57 is issued by National Chemical, Dept. CP, 6216 West 66th Place, Chicago, Ill. Inquiring specify CP 9429 on handy form.

How is described away view

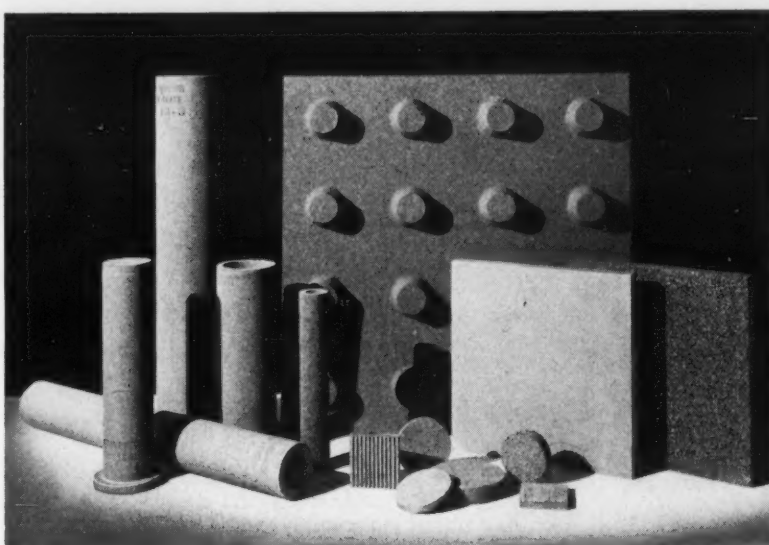
Illustration of a typical pilot-operated regenerative heat exchanger is highlighted of four-page, two-color bulletin. It contains five main design features. Pilots are making it easy to change function of main exchanger. For instance, any main valve can be converted from pressure to temperature control. Bul 700 is issued by Spence Engineering Company, CP, Walden, N. Y. When inquiring specify CP 9429 on handy form, pages 2 and 3.

um-pressure systems

It describes vacuum-pressure impregnating systems and their operation. Component parts and nine installation variations are shown. A listing of tank sizes (21 of them) is included. Page explains application of process in electrical equipment, metal castings, and textiles. Bul 51-B is issued by Spence Engineers, Inc., Dept. CP, Pittsburgh 6, Pa. Inquiring specify CP 9431 on handy form.

presented

Bulletin presents the physical and chemical properties of a commercial grade stearone. It consists of the corresponding ketones of stearic and lauric and is a hard, relatively high-melting, wax-like material. "C-846-R Stearone" bulletin is issued by National Chemical, Dept. CP, Carew Tower, Cincinnati. When inquiring specify CP 9432 on handy form, pages 2 and 3.



Gas-diffusing or filter mediums of Norton ALUNDUM* fused alumina are manufactured for a wide variety of commercial and laboratory operations.

Why should your porous mediums be uniformly porous?

Porosity may be defined as the percentage ratio of pore space by volume to the bulk volume of the piece. There are three types of pores: open, closed, and closed at one end. Obviously, the only passage through the medium is via the open pores. Therefore, if the flow of air or gas through the medium is to be uniform, it is essential that the medium's pores be uniformly distributed.

Norton, long-experienced in the development of fused alumina products, meets this need with porous mediums of ALUNDUM material. Thanks to "controlled structure" processing, all Norton ALUNDUM porous mediums have substantially the same pore volume — while the size and number of open pores are varied to provide the desired permeability.

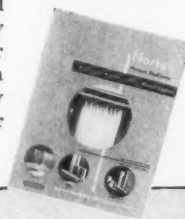
Other Advantages

ALUNDUM porous mediums are unaffected by acid, neutral or slightly

alkaline conditions encountered in commercial and laboratory processes... they are exceedingly refractory, withstanding temperatures up to 1000° C... their unusual strength assures maximum resistance to abrasion, high operating pressures and breakage or chipping in handling.

Send For Bulletin

Bulletin No. 140 contains complete data as to physical structure, etc., of Norton ALUNDUM porous mediums, and other refractory products. Let it help you decide whether they will benefit your processing. Your Norton representative will be glad to supply you with a copy, or write direct. Norton Company, 567 New Bond St., Worcester 6, Mass.

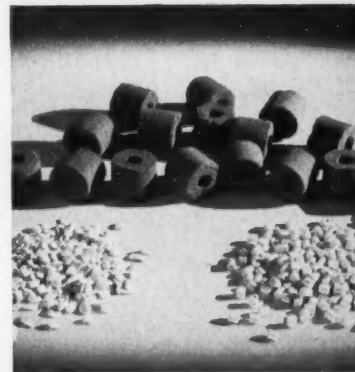


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POROUS MEDIUMS

Canadian Representative
A. P. GREEN FIRE BRICK CO., Ltd. TORONTO, ONTARIO

Fused Alumina Catalyst Supports In Wide Choice Of Surface Areas



Norton Company is now making catalyst supports in commercial quantities, in five different mixtures of refractory grains, ranging from 77% to 89% fused alumina. Water absorption values of these catalyst supports vary from 12% to 22% by weight, while surface areas by the nitrogen absorption method range from 0.025 to 0.821 square meters per gram. They are made in spheres, pellets and rings of varying sizes.

Get All The Facts

Your Norton representative will be glad to give you full information about these new catalyst supports. Or, a letter direct to us will get prompt attention.

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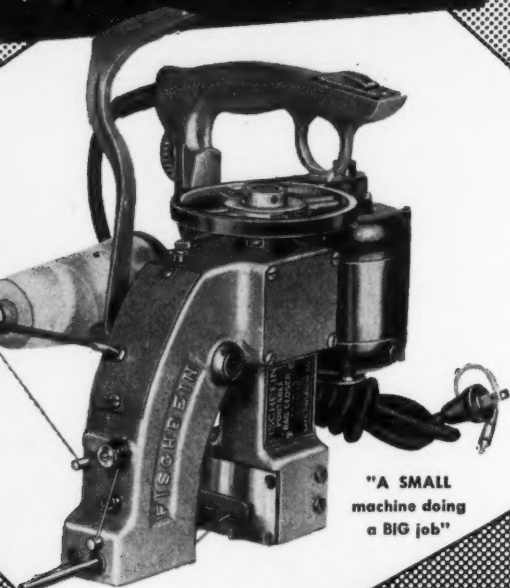
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When inquiring check CP 9433 on handy form, pgs. 2-3

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"A SMALL machine doing a BIG job"

Entirely portable... weighs only 10½ pounds

Requires no installation, supports or plant space... merely plug into any electrical outlet

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The FISCHBEIN PORTABLE BAG CLOSER has been thoroughly proved to be practical, reliable and efficient in both large and small plants, for continuous or occasional use. It is being used profitably in every part of the world under various operating conditions, and on a great variety of bags. IT CAN SOLVE YOUR BAG CLOSING PROBLEMS, TOO!

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FISCHBEIN CO. Industrial Sewing Machinery

Dept. 98 38 Glenwood Ave., Minneapolis 3, Minn.

inquiring check CP 9434 on handy form, pgs. 2-3

Packaging

Cushioning Material Easily Fabricated Into Protective Package

For bottled products, delicate mechanisms — can even be used for heat and sound insulation, filter media

USES: Protective cushioning material for packing and shipping a wide variety of products — bottled products, delicate mechanisms, and the like. Furnished to comply with all types and densities included in Federal Specification UU-C-843 for cellulosic cushioning materials.

Features: Easily fabricated by die-cutting, band sawing, and slitting, then attaching by mechanical means or by adhesives. Flexibility and resiliency, as well as toughness and firmness, suit it for irregularly shaped packing. Flame retardant, mold and vermin resistant, low heat and sound conduction, and vibration damping characteristics are very useful.

Description: Tufflex Cargo-Pak (made from clean, new cellulose fibers, felted into a mat) is offered in three types of cushioning material, classified essentially by degree of water absorbency. Type I is designed particularly to be highly absorbent to liquids. Type II is water resistant (partially absorbent) and is a general-purpose packing material. Type III is a highly moisture resistant material. In turn, these three types are each available in a selection of densities: Class A, over 1 but under 2 lb/cu ft. . . Class B, over 2 but under 3 lb/cu ft. . . Class C, over 3 but under 5 lb/cu ft.

Offered in rolls ranging from 3 to 50" wide, Tufflex comes in six different thicknesses between 1/8 and 1 1/2". Surfacing with waterproof and vaporproof kraft paper can be furnished on one or both sides of the sheet. Special roll widths and die-cut or sawed shapes can be supplied.

Other interesting applications for Tufflex are being

Improved heat sealing obtained by close control of pressure, heat and dwell time . . .

avoids wrinkles, splices, and contamination at seal; cycle is automatic after remote switch is pushed

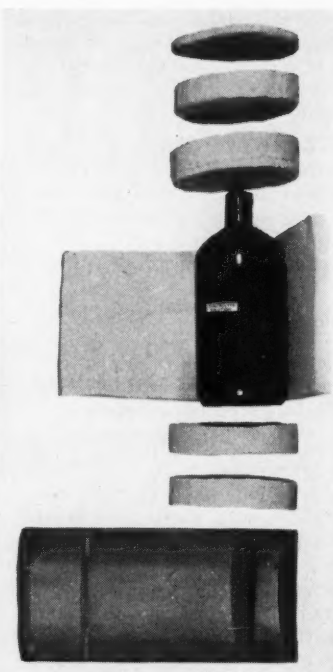
Uses: For sealing all heat-sealable barrier materials.

Features: Simultaneous application of the right heat, pressure and dwell time at the sealing jaw is assured.



Completed protective packaging for bottled product. If proper cushioning material is selected, felt will absorb liquids in event package receives hard enough blow to break container

Elements of protective package for bottled product



found in heat, sound, and cold insulation — vibration damping — shock, finish, and upholstery cushioning — finish protecting — and as liquid and gas filter media.

(Product of the Wood Conversion Company, Dept. CP, First National Bank Bldg., St. Paul 1, Minn. . . or for more information check CP 9435 on handy form, pages 2 and 3.)

This prevents formation of capillary leaks due to wrinkles and splices, and contamination at point of seal.

Description: Heat, pressure and dwell time are readable and adjustable, instantly, by operator. Pneumatically operated, the pressure at point of seal is regulated by turning a dial which registers in psi. Heat is controlled by thermostat adjustable within range of 250 to 500°F. Dwell time can be regulated within fractions of a second.

CHEMICAL PROCESSING

Three-f-

Sealing of which may it can be Once action is complete

Sentinel h 1 to 24' in

(Product Church St check CP

Bottles permits to provide

racks mode

Uses: of pallet

Features: automatic be moved

Description

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(Ratchet of Americ

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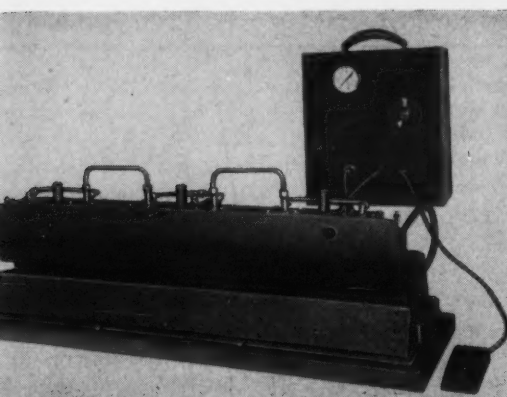
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Three-foot-long heat sealer with control cabinet and remote control switch

ing operation is activated by remote control switch
a may be operated by hand, foot or automatically; or
n be synchronized with other moving equipment.
action is started it is automatic until the entire cycle
ompleted in accordance with previous settings.

anel heat sealers are available in models ranging from
24' in length.

duct of Packaging Industries, Inc., Dept. CP, 50
ch St., Montclair, N. J. . . . or for more information
CP 9436 on handy form, pages 2, and 3.)

ess rack adjusts easily,
mits shelf movement
rovide extra space . . .

racks can be height adjusted at 6" intervals; three
models available for varying service requirements

For space saving storage and faster handling
ullet loads.

res: Rack is adjustable without bolting. Device
natically holds rack at desired height. Shelves
oved anywhere on rack.

ription: Rack shelf is inserted between upright



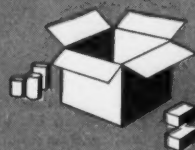
Ratchet racks adjust at 6" intervals

by fork truck. Rack can be height adjusted at
ervals. They are available in three models: stand-
heavy duty and extra heavy duty.

het racks are built by The Borroughs Mfg. Div.
merican Metal Products Co., Dept. CP, 5959 Lins-
etroit 4, Mich. . . . or for more information
CP 9437 on handy form, pages 2 and 3.)

RUARY, 1952

Gaylord

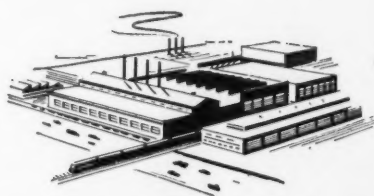


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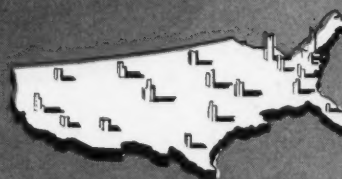


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PACKAGING

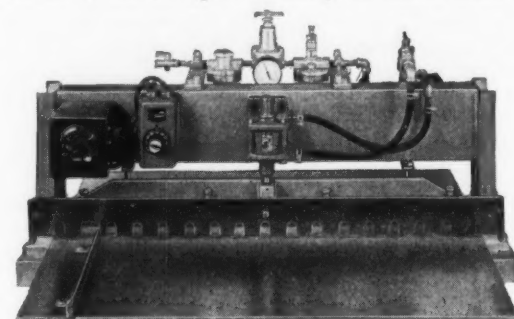
Seals liners and bags up to thirty-six inch in one move . . .

jaws of sealer are electrically heated, thermostatically controlled and thirty-eight inches wide

Uses: Final closure and sealing of large bags, pouches liners, etc., made of kraft or scrim-backed laminates, cellophane, pliofilm and other heat-sealing materials.

Features: Sealing bars 38" long will conveniently handle bags up to 36" in width.

Description: Foot pedal control operates jaws through a pneumatic system. Supply pressure needed is 60 to 100 psi. Air regulator permits sealing pressure to be varied between 19 and 31.5 psi. Similarly, an electric timer may



Control during sealing cycle is automatic

be adjusted for dwell times of 0 to 30 seconds. Finally, thermostatic control of the jaws allows temperature to be set at any value between 0 and 550°F. Thus the operation is controlled throughout sealing cycle. Operator simply places bag and presses the pedal. Temperature, pressure and dwell follow the pre-set adjustments.

Four heating elements are used. Each is brass sheathed. Total heating wattage is 1500 w.

(Jumbo Jaw Heat Sealer is a product of Pack-Rite Machines Div., of Techtman Industries, Dept. CP, 714 W. Wisconsin Ave., Milwaukee 1, Wis. . . . or for more information check CP 9439 on handy form, pages 2 and 3.)

Dries in just 10 minutes — leaves metals with good rust inhibiting coat . . .

reported to minimize painting costs by its fast drying

Uses: One-coat rust inhibiting paint for application over new or rusted metal surfaces of all kinds (including galvanized). Suitable for indoor or outdoor use and can be used over damp surfaces. Recommended for service where grease, oils, water, salt air, gasoline fumes, etc., are encountered. Serviceable temperature range extends from —100 up to 250°F. Maker recommends paint for equipment, hand rails, etc.

Features: Air-dries in 10 minutes under normal drying conditions, and for this reason is said to minimize painting costs.

Description: Rust Inhibitor FD-425 leaves a semi-gloss finish. It is available in several colors as well as in aluminum and clear. Coverage usually averages 600 square feet per gallon but naturally depends upon surface to which applied.

(Product of United Laboratories, Inc., Dept. CP, 16801 Euclid Ave., Cleveland 12, Ohio . . . or for more information check CP 9440 on handy form, pages 2 and 3.)

CHEMICAL PROCESSING

Light Weight—Strongly made of stainless steel to protect your chemical products while reducing transportation costs.



One-Man Handling—These compact, lightweight 15½-gallon barrels are easily and safely handled by one man.



stainless steel chemical containers reduce handling costs

Hackney
MILWAUKEE

Safe Pouring—Handy, full curled foot rings are easy to grasp—eliminate hazardous spilling of dangerous acids.



Perfect Stacking—Bottom foot ring fits snugly and securely over top ring of first barrel to build a safe, compact stack.

Positive Identification—Easy-to-read lettering on bottom foot ring quickly identifies owner—advertises owner's name and address. I.C.C. data embossed in top ring.



Here's the modern way to ship and store acids, solvents, extracts, fruit juices, oils and many other dangerous or perishable products. Use Hackney Stainless Steel Chemical Containers and save handling costs all along the line. You'll find one-man handling

is practical—transportation costs are lower—storage requirements are reduced—breakage and spilling hazards are eliminated. Made in several types of stainless steel for specific product protection. Write today for full details.

Pressed Steel Tank Company

Manufacturer of Hackney Products

1463 S. 66th St., Milwaukee 14 • 1387 Vanderbilt Concourse Bldg., New York 17 • 235 Hanna Bldg., Cleveland 15
936 W. Peachtree St., N.W., Room 126, Atlanta 3 • 208 South La Salle Street, Room 796, Chicago 4 • 568 Roosevelt Bldg., Los Angeles 14

CONTAINERS FOR GASES, LIQUIDS AND SOLIDS

When inquiring check CP 9438 on handy form, pgs. 2-3



PACKAGING

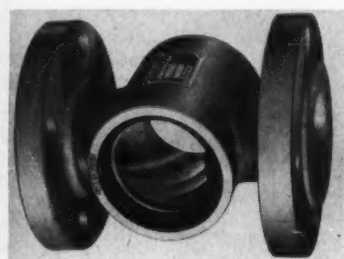
"Window" for pipe holds pressure or vacuum . . .

available in several corrosion-resistant alloys, glasses

Uses: Provides visual inspection of material flowing in pipeline. While the operators cannot measure flow rate with this device, he can see condition of the material being handled and make sure that it is still flowing.

Features: Holds vacuum or pressures to 2000 psi without leaking.

Description: Trin-Vue flow indicator consists of a pair of sturdy glass windows on opposite sides of a standard-size tube fitting. Indicator is furnished with van Stone



For quick check of flow in lines

lap joint stub ends welded to the extra heavy wall forged tubing. Use of ordinary steel for the flanges results in a 52% weight saving of special alloy (comparable cast construction).

Glass is sealed in place with O-rings and retaining rings. This elimination of bolts does away with stress concentrations, while maintaining a good seal with vacuum or with pressures up to 2000 psi. At higher pressures, quartz or Herculite glass is recommended. For ordinary service to 350 psi, Pyrex is standard.

Sizes from 1/2 to 4" (tube size) are available in these alloys:

| | |
|-------------|----------------------|
| Hastelloy B | 304 Stainless |
| Hastelloy C | 316 Stainless |
| Monel | 347 Stainless |
| Nickel | Steel (rubber lined) |

Standard model has the plain interior design shown. Flapper and drip-lip designs are also made.

(Announced by Trinity Equipment Corp., Dept. CP, 472 Westfield Ave., East, Roselle Park, N. J. . . . or for more information check CP 9441 on handy form, pages 2 and 3.)

For more information on product at right, specify CP 9442 . . . see information request blank between pages 2-3.

FROM FIRST COST TO LAST

LESS PACKAGING EXPENSE

WITH
CHEM-PAK

DEPENDABLE SIFT-PROOF PAPER BAGS
SPECIALLY ADAPTED FOR SHELF-UNIT
PACKAGING OF CHEMICAL PRODUCTS

CHEM-PAK
BAG TYPES FOR MANY NEEDS



Heavy-duty construction; wax-treated or asphalted paper when desirable. Paper combinations to protect against moisture, odor, grease, vapor, etc. Excellent printing characteristics. Cut so paste can't ooze. Protective "shingle" construction; no open area through which contents can sift.

CHEM-PAK STANDARD

Made with the original and justly famous Union sift-proof feature.



Thermoplastic applied to inside top portion of bag. Closure can be made on standard heat-sealing equipment. Paper combinations to suit the individual protective qualities desired. Excellent printing surface for shelf display packages. Bottom has famous Union sift-proof "shingle" construction.

CHEM-PAK UNISEAL

Standard CHEM-PAK with a thermoplastic application to effect a heat sealed closure.



Can be closed on standard heat-sealing equipment. Heat-sealing top guarantees a sift-proof closure. Unithene, chemically inert lining for packing Class "B" poisons, corrosive and hygroscopic chemicals. Bottom squares out flat for easier packaging, better shelf display. Bottom both heat sealed and adhesive reinforced.

CHEM-PAK UNITHENE*

Special Duplex paper combination. Inner ply — Unithene.*

*UNITHENE—Union high-test kraft with control-coated polyethylene.

CHEM-PAK
SIFT-PROOF PAPER BAGS FOR CHEMICAL PRODUCTS

UNION BAG & PAPER CORPORATION
NEW YORK: WOOLWORTH BUILDING • CHICAGO: DAILY NEWS BUILDING

CHEM-PAK BAGS FOR FERTILIZERS—INSECTICIDES, FUNGICIDES, DUSTING POWDERS—PLANT FOODS—WALL SIZE—PASTE FLOUR—PATCHING PLASTER—PREPARED CEMENT—PLASTER OF PARIS—PHARMACEUTICAL CHEMICALS—DYES AND PIGMENTS—SANITARY CHEMICALS—POWDER SHAMPOOS—CHLORINE COMPOUNDS AND ALKALIDES—CAULKING, SEALING, WHITING AND FILLING COMPOUNDS—AND OTHER DRY CHEMICALS WITH COMPARABLE PACKAGING REQUIREMENTS

VERSATILE CHEM-PAK bags are certified sift-proof. They meet requirements of the Interstate Commerce Commission — are safe even for Class "B" poisons. You'll find them an excellent solution for most packaging problems where dry chemicals are put up in units of twenty-five lbs. or less.

CHEM-PAKS are made in a wide range of paper combinations and closures, suitable for almost any dry chemical sold in small retail units. Their protective qualities compare favorably with more expensive containers. They are easy to handle, inexpensive to pack and ship, colorfully suited to retail display.

Measure your present package against CHEM-PAK. You can make a quick, accurate appraisal with Union's new Chemical Package Evaluator. This handy guide is yours for the asking. The coupon brings it.

UNION'S MODERNIZED PLANT AT HUDSON FALLS, N. Y.
BILLION-BAG SPECIALTY PACKAGING HEADQUARTERS



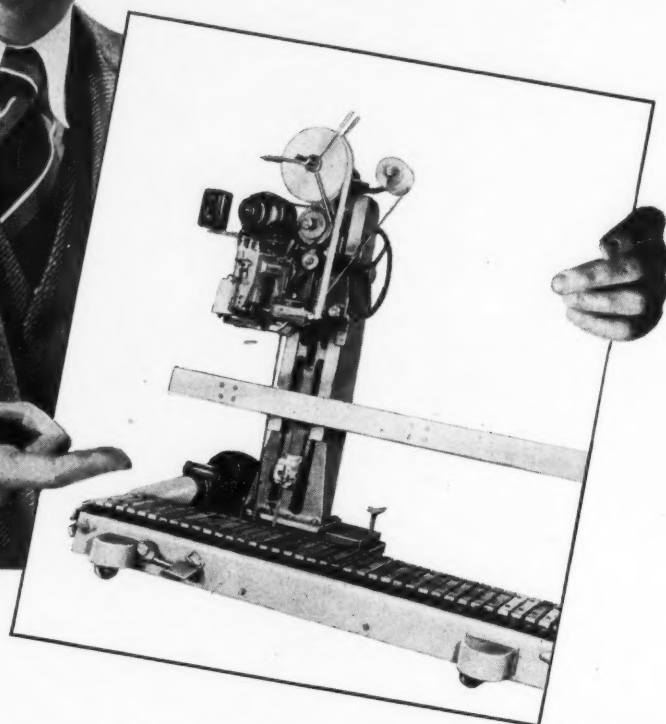
NEW! Mail this coupon for practical CHEMICAL PACKAGE EVALUATOR. No charge or obligation.

Union Bag & Paper Corporation
Woolworth Building, New York 7 CP 252
Please send me the new Chemical Package Evaluator.

Name _____ Title _____
Company _____
Address _____
City _____ Zone _____ State _____
Products _____



"I believe in being honest and telling you
**Exactly What I Think
About This Bag Closer**"



Model ET applies famous "Cushion-Stitch" over dry tape for sift-proof closure. Model E-1 applies "Cushion-Stitch" only, for use where sift-proofing is not essential.

For full details,
write today for booklet 280 P

"I bought a Model ET Bagpaker® — the one that applies the 'Cushion Stitch' over a dry tape. It makes a neat, strong, sift-free closure. The machine is of welded steel construction throughout — well built — I don't think it will ever wear out. It takes care of up to 15 bags per minute, and only one man is needed to operate it.

"The thing I like best about the Model ET is that it hasn't given me a bit of trouble — no breakdowns or delays. It purrs right along minding its own business. I'm sold on it."

International Paper Company

BAGPAK
DIVISION

220 East 42nd St., New York 17

BAGPAK MULTIWALL BAGS

BAG PACKAGING MACHINES

BRANCH OFFICES: Atlanta • Baltimore • Baxter Springs, Kansas • Boston • Chicago • Cleveland • Denver • Los Angeles • New Orleans • Philadelphia • Pittsburgh • St. Louis • San Francisco
IN CANADA: The Continental Paper Products, Ltd., Montreal, Ottawa, Toronto.

When inquiring check CP 9443 on handy form, pgs. 2-3

PACKAGING

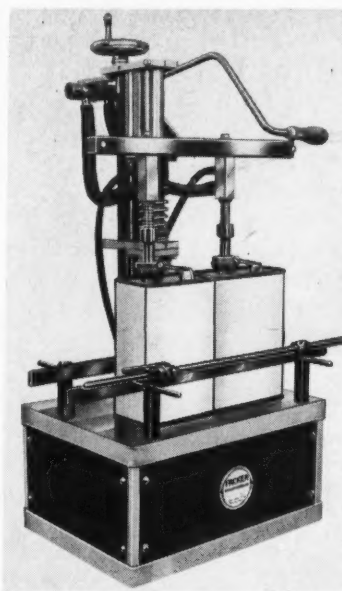
**Either vacuum or gravity
furnishes power for
filling containers . . .**

fill containers from fractional ounces to gallon with thin, foamy, viscous, hot or cold liquid

Uses: Vacuum filler handles containers from fractional ounces to quarts. Gravity model can also be used on gallon cans.

Features: Electric and plumbing connections of vacuum unit are simple. Gravity unit requires no connections or power.

Description: Bench Model Vacuum Liquid Filler is available with either three or four spouts and fills directly from the drum, carboy, or other container resting on the



Gravity filling model

floor. Unit is supplied with pump and motor for maintaining the vacuum. As with gravity model, it is intended to be intermediate in speed and capacity between hand methods and larger production line equipment. Speed with the vacuum model can be in excess of 25 containers per minute.

Bench Model Gravity Liquid Filler is simpler, not having any power source other than gravity. Its two spouts can fill four gallon tins per minute or up to about 10 pints per

minute. It will also fill fractional ounce containers. Overflow in either model is taken care of by an overflow jar attached to the outlet hoses. Also, either model can fill containers with practically any still liquid whether it is thin, foamy, viscous, hot, or cold.

All metal parts contacting the liquid are stainless steel. Hoses are neoprene, but can be replaced with plastic tube if desired.

(Products of Packer Machinery Corp., Dept. CP, 30 Irving Place, New York 3, N.Y. . . . or for more information check 9444 on handy form, pages 2 and 3.)

**Measures tin thicknesses
of 0 to 150 micro-inch
non-destructively . . .**

Geiger counter picks up secondary radiation from iron under the tin-plate when sample is hit with X-ray

Uses: Non-destructive measurement of the thickness of tin-plate on iron.

Features: Particle count is read directly from a mechanical register — converted to tin thickness by simple calibration curve.

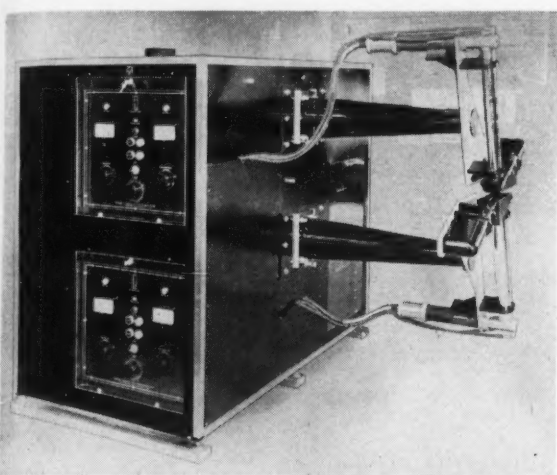
Description: Tin-plate thickness gage operates by shooting a beam of X-rays about 2 1/4" in diameter obliquely into the sample of plated iron. Two Geiger

CHEMICAL PROCESSING

PACKAGING

tubes are mounted on the same side of the sample as the X-ray.

These Geiger tubes detect and measure the intensity of emergent radiation after it has passed through a collimating system which restricts to a given range the



Checks tin-plate thickness in about 30 seconds

absorption path in the tin. Intensity of rays emitted by the iron can be expressed as a logarithmic function of tin plate thickness. In practice this is reduced to a reading on the printing register.

X-ray generator is designed to operate on 200-240 v AC, 50/60 cps. The tungsten-target tube is oil insulated and water cooled, as is the power transformer. Beam strikes the surface at 70° from the horizontal. Penetration of the beam is controlled by a kilovoltage control of the tube.

In operation Geiger counter drives a scaling unit and printing register through a cathode follower. Count is allowed to accumulate over a preset time interval (usually 30 seconds). Printer makes a record of total count and resets circuits for next run.

Unit is 71½' long, 61½' wide and 5' high. Rated at 6 kva, it will handle tin coatings ranging in thickness from 0 to 150 micro-inches. It is available as a single or double unit for measuring one or both sides of the plated metal, respectively.

(Research & Control Instruments Div., North American Philips Company, Inc., Dept. CP, 750 S. Fulton Ave., Mount Vernon, N.Y. . . . or for more information check CP 9445 on handy form, pages 2 and 3.)

Substitute packaging materials and how they save tin

Plastic-bound, 26-page booklet presents improved packaging methods and materials that replace the ordinary "tin" can, at one-half to one-fourth the cost. Packages made from these materials can be made on standard automatic high-speed machines. A table compares costs and material used in packaging 25 specific items.

Booklet emphasizes material combining foil, paper, and wax, besides other materials made of various combinations of paper, foil, cloth, and plastics. "How Aluminum Can Save Tin," issued by Reynolds Metals Company, Dept CP, 2500 S. Third St., Louisville 1, Ky. When inquiring specify CP 9446 on handy form, pages 2 and 3.

FEBRUARY, 1952

ON ARRIVAL!

CHASE Sharkcraft

Built to TAKE it!

THE ALL-CRINKLED MULTIWALL BAG

Chase Sharkcraft cuts costly breakage! All plies are crinkled to give "shock-absorbing" elasticity—assures great resistance to shocks, strains, and rough handling! The "shark-skin" crinkling provides a sure grip—it is easier to handle, stacks better! Choice of 2 to 5 plies. Attractive appearance and sharp, colorful printing help sell your product. Get the facts on this better container. Mail the coupon TODAY!

CUTS COSTLY BREAKAGE IN THE PACKAGING OF:

- Farm Products
- Powdered Milk
- Mineral Concentrates
- Seeds
- Chemicals
- Pharmaceuticals
- Fertilizers
- Meat Scraps and Tankage
- Starch Products
- Rock Products

bags for all industry and agriculture

- cotton bags of all kinds
- Topmill burlap bags
- paper and Multiwall bags
- Saxolin open mesh bags
- lined and combined bags, liners and specialties

CHASE BAG COMPANY
309 West Jackson Boulevard
Chicago 6, Illinois
Gentlemen: Please send me more information about SHARKRAFT bags for the packaging of

() Have Salesman Call

Name.....

Address.....

City.....State.....

CHASE BAG CO. GENERAL SALES OFFICES: 309 W. JACKSON BLVD., CHICAGO 6, ILL.

BOISE • DALLAS • TOLEDO • DENVER • DETROIT • MEMPHIS • BUFFALO • ST. LOUIS • NEW YORK • CLEVELAND • MILWAUKEE
PITTSBURGH • KANSAS CITY • LOS ANGELES • MINNEAPOLIS • GOSHEN, IND. • PHILADELPHIA • NEW ORLEANS • ORLANDO, FLA. • SALT LAKE CITY
OKLAHOMA CITY • PORTLAND, ORE. • REIDSVILLE, N. C. • HARLINGEN, TEXAS • CHAGRIN FALLS, O. • WORCESTER, MASS. • CROSSETT, ARK. • SAN FRANCISCO

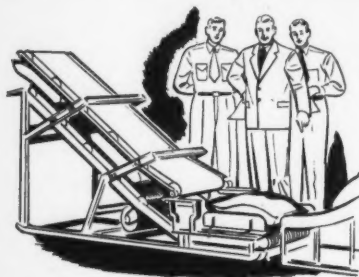


For information on Chase
Sharkcraft/Mail Coupon Today!

When inquiring check CP 9447 on handy form, pgs. 2-3

NO. 4 OF A SERIES ON HOW TO Stretch a MULTIWALL Paper Bag

It is just good business to get the best possible use from your multiwalls. Here's how Bemis can help you . . .



USE THE EXPERIENCE OF BEMIS SALESMEN AND SERVICEMEN

From installation of equipment to car-loading, Bemis men can often give money-saving help. Here is an actual case:

A mill complained that multiwalls were breaking going through the bag flattener. A Bemis Salesman found that—

1. The chute from the valve packer was too steep. The bags hit the flattener rolls too fast.
2. An obstruction in the chute made small cuts in the bag.
3. The guide rails were too far apart so some bags entered the rolls on the diagonal.

The causes of trouble were eliminated . . . everybody benefited.



USE A BEMIS SEWING MACHINE CLINIC

These clinics are informal instruction periods conducted by specially trained Bemis experts for plant personnel who supervise and use bag closing sewing machines. There are demonstrations and discussions on sewing machine operation and maintenance. Motion pictures show efficient installations, the dismantling and reassembling of sewing heads, etc.

Bemis specialists also assist in planning production line changes . . . and they will recommend new types of equipment, describe latest methods, or help you with special packaging problems.

Want the Whole Story?

Ask your Bemis Man for a copy of the illustrated Bemis Multiwall Packing Guide. It deals with Storage, Filling and Closing, Handling, Palletizing and other important subjects that will help you make your multiwall bags serve you better.

If you need cotton or burlap bags also, Bemis is your best source.

Bemis



St. Louis 2, Missouri

PACKAGING

No material-trapping corners in drum liner . . .

polyethylene liner has double rim and bottom for extra protection

Uses: Polyethylene lining for drums.

Features: No corners to trap and hold material. Double bottom and double rim provide extra protection against cuts and tears.



Description: Polyethylene drum liner is electronically sealed. It can be removed, folded and stored for future use. The liners come in 55-gal and 30-gal sizes.

(Produced by Enley Products, Inc., Dept. CP, 254 Pearl St., New York 38, N. Y. . . . or for more information check CP 9449 on handy form, pages 2 and 3.)

Feeds work pieces to machine tools

Three-color, 16-page bulletin shows installation photographs and details all parts of a rotary feed table. Latter can supply work pieces to and under drill press spindles, milling cutters, arbor and impact press rams, riveting heads, etc. Standard 10 and 22" table top models are available, and both are arranged for electrical control.

Dimensional drawings and specification data cover the two types. Bul T-85 is issued by The Bellows Co., Dept. CP, 222 W. Market St., Akron, Ohio. When inquiring specify CP 9450 on handy form, pages 2 and 3.

NO WAITING FOR HELPERS

He picks it up and is away!

The TRUCK for BARRELS and DRUMS

Yes, about as quick as you can say it, One Man can pick up loads weighing as much as 800 pounds and be on his way, with a —



SABIN BARREL TRUCK

SAVES TIME AND RELIEVES PREVIOUS HELPERS FOR OTHER WORK.

It is easy to handle. You simply run truck up to container hook on at top, and Exclusive third wheel feature adds to ease and safety in moving loads.

Write for Bulletin on full line of Sabin Barrel and Drum Trucks.

THE SABIN MACHINE CO.

6534 Carnegie Avenue • CLEVELAND 3, OHIO

When inquiring check CP 9451 on handy form, pgs. 2-3



Left—
Union Special
Style 20100 H
Bag Closing
Machine

*Here's how to close
MULTIWALL
PAPER
BAGS*

FOR lower production costs . . . stronger, neater closures . . . ability to get out rush orders in a hurry, you can't beat Union Special Bag Closing Machines! Specially built to stand up under heavy production schedules, these machines provide the high output rates needed to meet modern competitive conditions.

In the Union Special line, it's easy to find the right unit to meet your particular requirements. ASK FOR RECOMMENDATIONS.

SEND FOR THIS BULLETIN!



Get your copy of this 16 page illustrated bulletin containing helpful data and charts on the complete Union Special line of bag closing machines. UNION SPECIAL MACHINE CO., 442 North Franklin Street, Chicago 10, Illinois

UNION SPECIAL

When inquiring check CP 9452 on handy form, pgs. 2-3

CHEMICAL PROCESSING

When inquiring check CP 9448 on handy form, pgs. 2-3

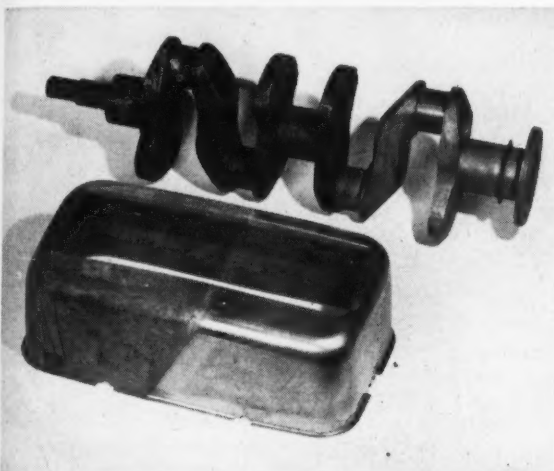
PACKAGING

Alkaline de-rusting process faster than acid pickling . . .

is easier to handle from corrosion standpoint; simultaneously cleans as it de-rusts

Uses: De-rusting process for steel, cast iron, malleable iron, and other iron alloys.

Features: Process is alkaline, thus it simultaneously de-rusts and cleans. Does not present a general corrosion problem as in the case of acid pickling, and in addition,



Note how bright and clean the right hand sections of these parts are after alkaline de-rusting

subsequent rusting of de-rusted articles is not accelerated as with acid pickling.

Speed of de-rusting is more rapid than with acid pickling. In a test, complete rust and scale removal was accomplished in merely 2 minutes, as against 45 minutes for acid pickling.

Description: Process is based upon alkaline salts — a powder known as Enthone Derusting Compound 134 — which makes up the de-rusting bath. Solution is workable in steel tanks at room temperature. Parts heavily contaminated with grease should first be degreased (light oils are removed through alkaline action).

Parts to be de-rusted are immersed in the solution where they are made the cathode by proper application of current. A few seconds to several minutes at current densities from 5 to several hundred amperes per square foot can be used, depending upon the speed of de-rusting desired. Extended treatment does not attack the metal, it is reported. Bath is easily controlled by titration. De-rusted metal parts are clean and bright.

(Product of Enthone, Inc., Dept. CP, 442 Elm St., New Haven, Conn. . . . or for more information check CP 9453 on handy form, pages 2 and 3.)

Starch-urea resin glues in 3 different formulations

Containing five pages, set of notes suggests formulations and production techniques for weatherproof pastes based on starch and manufacturer's wet strength resins. Specific recommendations are given for corrugating adhesives for boxboard, solid fibre board adhesives, and bag paste. "Uformite Resins in Waterproof Starch Pastes" is issued by Resinous Products Division, Rohm & Haas Co., Dept. CP, Washington Square, Philadelphia 5, Pa. When inquiring specify CP 9454 on handy form, pages 2 and 3.

FEBRUARY, 1952

The light way to ship is in Continental Fibre Drums



These light-weight durable shipping containers are designed for real economy. They bring you appreciable savings on shipping charges — savings that can amount to substantial sums in the face of today's high freight rates. And they also save you worthwhile amounts on export shipments where import duties are figured on gross weight.

Continental drums are tough and sturdy. They stand up to the abuse of long freight hauls without splitting,

cracking or leaking. This means you can give expensive or dangerous materials adequate shipping protection at minimum shipping cost. Closures seal securely, yet go on and off easily.

These drums can be printed or paint sprayed to become colorful, effective "traveling salesmen!" Continental fibre drums are available in a full line of sizes, from 12 gallons to 75. Call or write your nearest office for complete details.

CONTINENTAL © CAN COMPANY

Fibre Drum Division

Van Wert, Ohio

NEW YORK
CHICAGO

PHILADELPHIA
SAN FRANCISCO

PITTSBURGH
ST. LOUIS

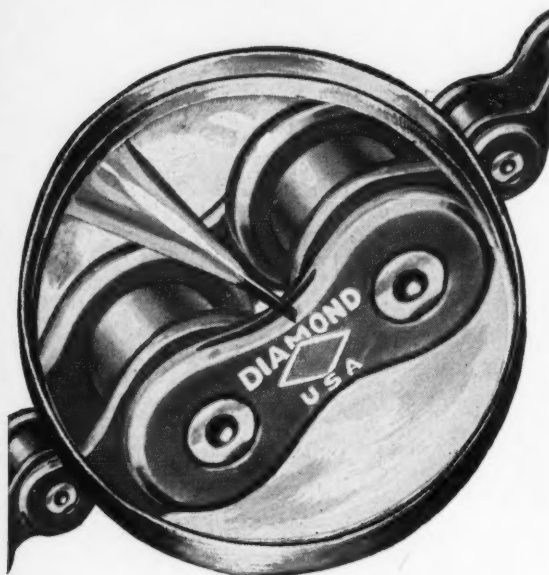
TONAWANDA
LOS ANGELES

CLEVELAND
EAU CLAIRE

When inquiring check CP 9455 on handy form, pgs. 2-3

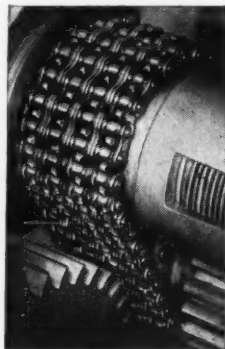
The Symbol of ROLLER CHAIN QUALITY— The DIAMOND

TRADE  MARK



• The "Diamond" mark stamped on every link is more than a ready means of identifying Diamond Roller Chains. It is a symbol indicating unvarying quality of the product and the integrity of the maker.

For power transfer of every kind, this flexible uniformly-made Roller Chain assures smooth operation, high efficiency (98-99%) and positive insurance against slippage. Diamond Roller Chains operate equally well on short or long centers,—at low or high speeds,—and at small or very large horsepower capacities.



DIAMOND CHAIN COMPANY, Inc.

Dept. 411, 402 Kentucky Avenue, Indianapolis 7, Indiana
Offices and Distributors in All Principal Cities

Refer to the classified section of your local telephone directory under the heading CHAINS or CHAINS-ROLLER

DIAMOND



ROLLER CHAINS

When inquiring check CP 9456 on handy form, pgs. 2-3

Positive Pressure Displacement Used in System for Pumping Thick Pastes, Slurries

**Abrasives and corrosives also numbered among fluids
for which unit is designed**

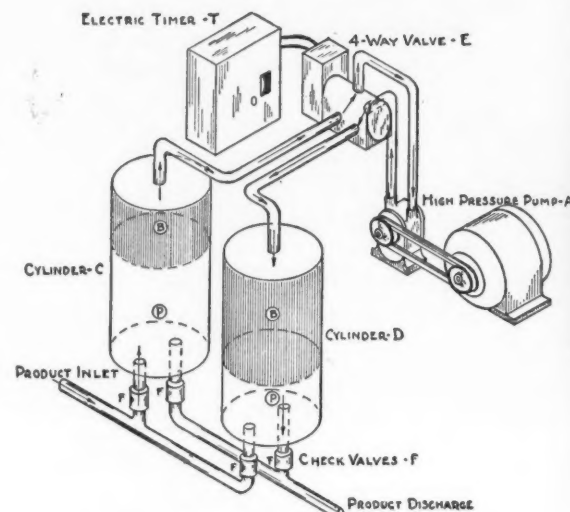
USES: Designed to handle slurries, viscous pastes, abrasive or corrosive fluids, and suspended solids.

Features: Pumping action is positive, yet so gentle that delicate materials can be handled without injury. Construction is simple and sanitary (stainless steel or other materials), and there are no bearings, mechanical pistons, packing glands, valves, or impellers in the pressure cylinders.

Description: Operation of the Hydrex pump is illustrated in the accompanying drawing. High-pressure pump (A) sends hydraulic fluid (B) alternately to and from cylinders (C) and (D), the fluid acting as a hydraulic piston in the cylinder. Pumping action is controlled by four-way valve (E) actuated by electric timer (T). Inlet and outlet check valves (F) determine direction of product flow.

Fluid (B) may be oil or other appropriate fluid, and a suitable membrane is used when it is necessary to prevent the fluid from contacting the product.

Referring to drawing, media (B) is being pumped from cylinder (C) to cylinder (D). Product (P) is drawn from source into cylinder (C) while product in cylinder (D) is being forced out to storage tank or other processing unit. When media (B) reaches set limits of travel in the cylinders, electrical solenoid actuates four-way valve (E), changing port connections and reversing direction of flow of media (B). The media now is pumped from cylinder (D) to cylinder (C).



Drawing shows simplicity of operation of Hydrex pump

(Produced by Manton-Gaulin Manufacturing Company, Dept. CP, 65 Garden St., Everett 49, Mass. ... or for more information check CP 9457 on handy form, pages 2 and 3.)

Phosphatized Ferrous Surfaces Retain Lubes, Wear Better, Resist Corrosion

**Immersion process easily operated; coating reported
to surpass zinc phosphate in many respects**

MANY advantages are reported for a chemical treatment called Rustshielding, that transforms a reactive ferrous surface to a phosphate coating. Among its advantages are corrosion resistance, lubricant retention, and wear resistance. Success of the treatment is based upon a phosphatizing compound, Rustshield 2.

Treatment produces an exceptionally dense, crystalline phosphate deposit that is an integral part of the metal surface, due to its chemical origin, and cannot be attacked as easily as a physically bonded surface. Weight of coating is about 2500 milligrams per square foot of area, and thickness can range from 0.0002 to 0.0004 inch. By

proper process control, build-up can be limited to 0.0002 inch, thus precision parts can be coated and held within limits of dimensional tolerances. Examination of the coating reveals a continuous surface of microscopic hills and valleys.

Corrosion resistance: Rustshielded surfaces are reported to have greater resistance to alkali than surfaces treated with zinc phosphate compounds. This is advantageous where phosphate-treated articles are cleaned of dirt and oil with alkali agents and subsequently do not require re-phosphatizing.

Corrosion resistance can be increased by finishing with

special
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can be

special inhibiting oils and waxes. However, an un-oiled Rustshield surface passes the 1-hour salt spray test required by US Army Ordnance Specification 57-0-20, Type I, Class A, and the 1½-hour salt spray test required by Military Specification MIL-0-16232 (Ships), Type I.

A Rustshielded surface is reported to produce an excellent base for organic films. Heat resistance of treated surfaces is high.

Lubricant retention: By its nature (crystalline structure and microscopic hills and valleys), treated surface is highly absorbent and forms an excellent oil-retaining base. By soaking up oils, a uniform, constantly lubricated surface results that is highly desirable for preventing galling and seizing of metal parts that slide or rub against one another. Lubricants are said to cling tenaciously to Rustshield surfaces.

Wear resistance: By virtue of oil retention, break-in time for frictional parts is substantially reduced by prevention of scuffing and other forms of abrasion during initial operating period. Tests performed with the Taber Abrader show that the wear resistance of a

Rustshield coating is several times that of a black oxide coating. Scuff resistance tests carried out by the Institution of Automobile Engineers (British organization) showed that scuff resistance of case hardened gears with this type of coating is about twice that of untreated gears, and about one-third greater than that of gears with zinc phosphate coating.

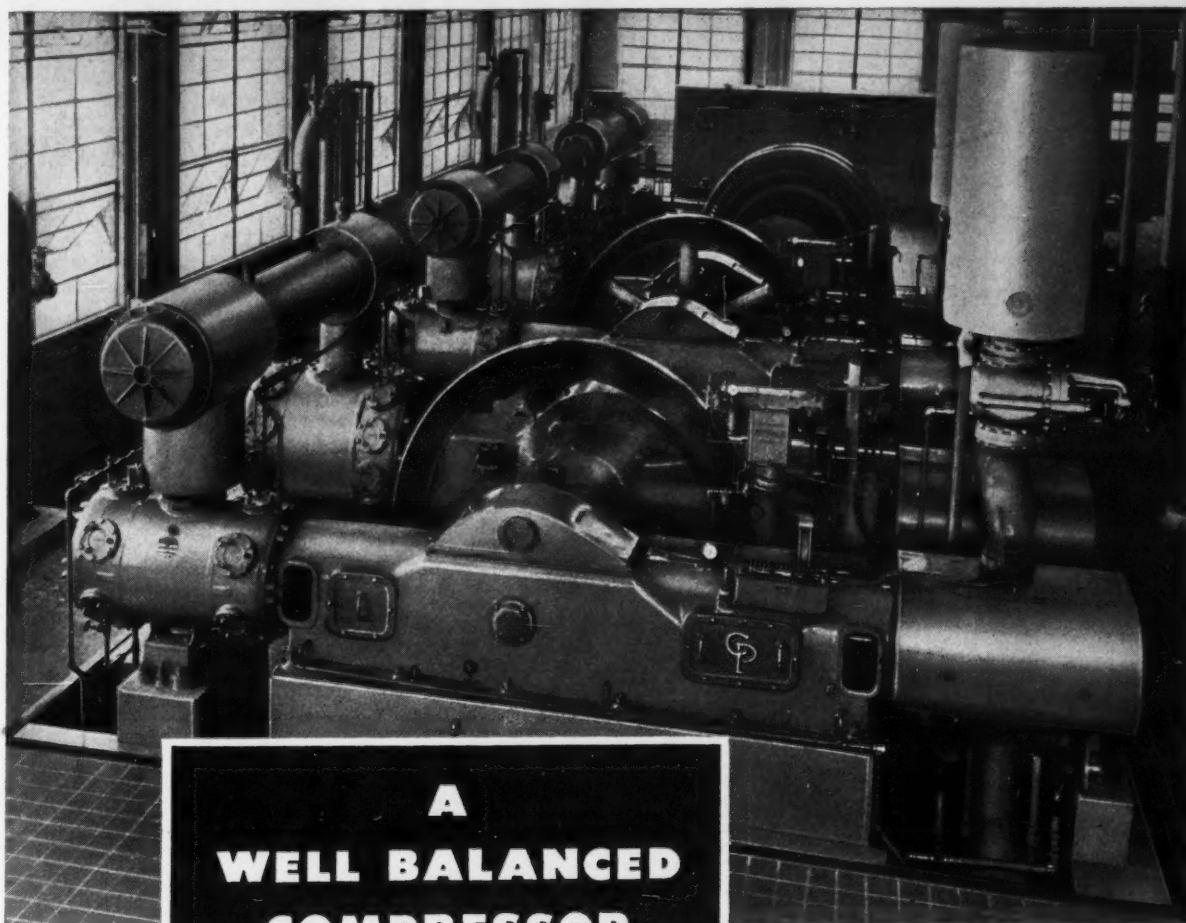
Typical parts being treated for wear resistance include rust washers, pistons, gears, valve roller pins, stems and guides, and other bearing and sliding surfaces.

Rustshield process: Metal surfaces should be free of oil, grease, oxide, and scale before coating. Grease and oil can be removed by vapor degreasing, emulsion solvent, or alkali cleaning. Oxide and scale can be removed by acid pickling or by blast abrasives. Ordinary pickling acids result in a very coarse phosphate coating and should be avoided with precision parts. (Maker has a special pickling solution for precision parts.) Rusting between cleaning and further processing should be strictly avoided.

Non-technical personnel can operate and control the Rustshielding process with no more than a few hours' instruction.

A series of 5 tanks is used. The first contains either an alkali or emulsion cleaner. Second holds a hot water rinse. (If a vapor degrease is used, these two tanks can be eliminated.) Third tank (constructed of stainless

(Continued on page 175)



A WELL BALANCED COMPRESSOR INSTALLATION

This CP installation in one of the country's largest automobile plants — three 500 horsepower compressors, one motor-driven and two steam-driven — is a good example of effecting heat balance.

Such combinations of steam and motor-driven compressors provide a desirable flexibility of operation and reduce power costs particularly in plants where exhaust steam can be utilized for process work or for heating.



PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS • DIESEL ENGINES
ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES

Write for complete information.

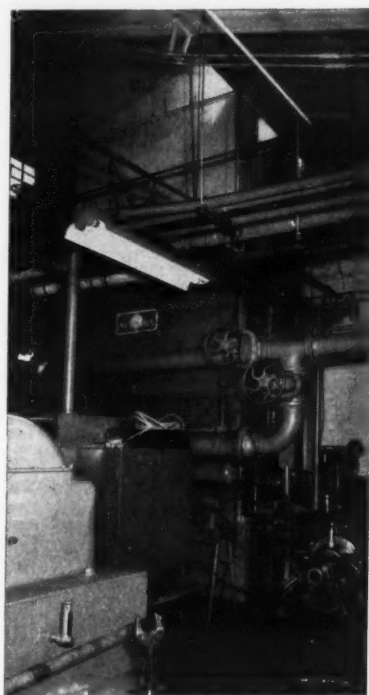
When inquiring check CP 9458 on handy form, pgs. 2-3

You Get Trustworthy Liquid or Gas Cooling With Great Cooling Water Savings from the NIAGARA AERO HEAT EXCHANGER

● You can cool air, gas, water, oils, chemicals, electric and power and process equipment, engines, mechanical processes with lower cost and really accurate control of temperature with the Niagara Aero Heat Exchanger.

You are assured of uniform, constant production and quality from any process . . . steady, reliable operation . . . lower cost for more dependable cooling. You can have closed system cooling with freedom from scale, dirt, corrosion and maintenance troubles. You can accurately cool more than one type of liquid with one machine.

The Niagara Aero Heat Exchanger uses atmospheric air to cool liquids and gases by evaporative cooling. You can remove heat at the rate of input to keep accurate control of gas or liquid temperature. You can put heat back into the system to save the losses of a "warm-up" period or to equalize the effect of load variations.



Great savings in cooling water and savings in piping, pumping and power return the cost to you quickly. The Niagara Aero Heat Exchanger can save you approximately 95% of your cooling water cost. Write for Bulletin 96.

NIAGARA BLOWER COMPANY

Over 35 Years Service in Industrial Air Engineering

Dept. CP, 405 Lexington Ave.

New York 17, N. Y.

Experienced District Engineers in all Principal Cities of U.S. and Canada

When inquiring check CP 9459 on handy form, pgs. 2-3

CONSTRUCTION

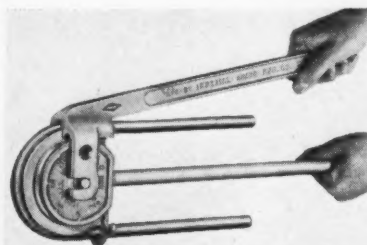
**Bends both 1/2 and 5/8" pipe
to any angle . . .**

operates easily and does not mar or deform the tubing

Uses: Bending both 1/2" OD (3/8" nominal) and 5/8" OD (1/2" nominal) soft copper, aluminum, brass or other soft, thin wall metal tubing.

Features: Does not mar or deform the tubing.

Description: Bender, No. 362-F, is of two-piece construction and quickly comes apart and slips over tube at exact point where bend is to be made.



Bends to any angle up to 180°

Dual size shoe and mandrel permit bending the aforementioned two sizes.

Bends can be made to any angle up to 180°, and bender is calibrated to show degree positions. Overall assembled length is 21", and weight is 3 lb.

(A product of The Imperial Brass Mfg. Co., Dept. CP, 1200 W. Harrison St., Chicago 7, Ill. . . . or for more information check CP 9460 on handy form, pages 2 and 3.)

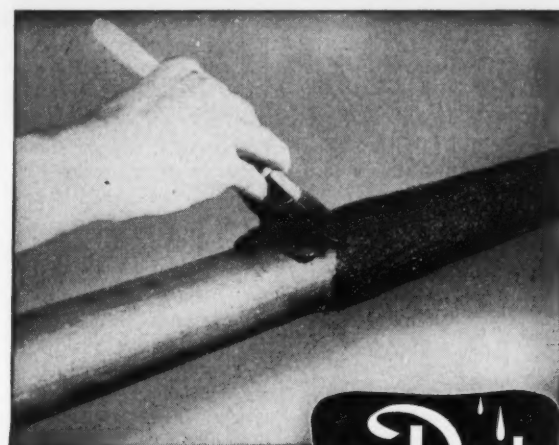
Lightweight welders deliver 200 amp

Uses: Direct current arc welders.

Description: Two model GA "WASP" direct current arc welders have ratings of 150 and 200 amp DC, respectively. Welding units are lightweight and are easily made mobile by mounting them on a two-wheeled carriage. They are self-exciting and use split-pole, cross-field construction. Excellent commutation and characteristics are reported at all currents and settings.

Continuous overlap in current ranges provides a wide unbroken range of welding current — 20 to 185 amp in the 150 amp unit; 30 to 250 amp in the 200 amp unit.

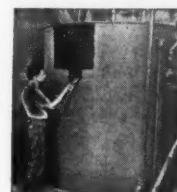
(Product of Air Reduction Sales Company, A Division of Air Reduction Company, Inc., Dept. CP, 60 E. 42nd St., New York 17, N. Y. . . . or for more information check CP 9461 on handy form, pages 2 and 3.)



**COVERS PIPES
TANKS, WALLS**

NoDrip

Anyone can brush, trowel or spray NoDrip on any clean, dry surface. Goes on like plaster, forms a seamless, protective coating. **STOPS CONDENSATION DRIP!**



NoDrip keeps equipment and floors safe and dry; prevents corrosion of metal and prolongs its life. Acid, alkali and brine resistant. Comes in 1, 5, and 55 gal. drums, ready for use.

TRY NoDrip

Apply NoDrip to a small area, compare the results with uncovered portions.

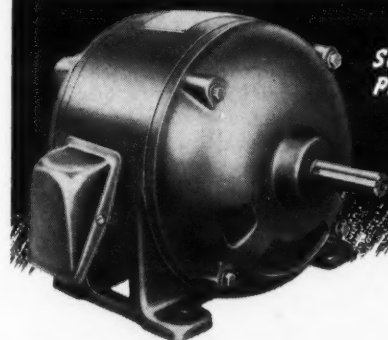
Send for free NoDrip Handbook
J. W. MORTELL CO., 530 Burch St., Kenosha, Ill.

When inquiring check CP 9462 on handy form, pgs. 2-3

Tops in motor ruggedness! CROCKER-WHEELER form BA

MOTOR

*Squirrel-edge
Protected-type*



■ Put it on a machine tool, stoker, pump, compressor, or any other drive calling for a protected type motor. Mount it any way you like—NEMA D flange mounting, horizontal or vertical . . . NEMA C face mounting . . . drip-proof or splash-proof enclosures. Also equipped with the C-W brake where you want quick stops. An all-round tough motor, in NEMA frames 203 to 505, and ratings beyond.
CW-35 Write for the BA Bulletin.



**CROCKER-WHEELER
DIVISION . . . AMPERE, N. J.**

Branch Offices and Representatives
in Principal Cities
Elliott Approved Service Shops
Cover the Country

When inquiring check CP 9463 on handy form, pgs. 2-3

CHEMICAL PROCESSING

(Continued from page 173)

steel) contains Rustshield 2 solution. Temperature here is maintained between 205 and 210°F. Parts to be coated are immersed in the solution for 15 to 20 minutes, or for about 10 minutes after hydrogen evolution ceases. Fourth tank is a hot water rinse, and the fifth holds a



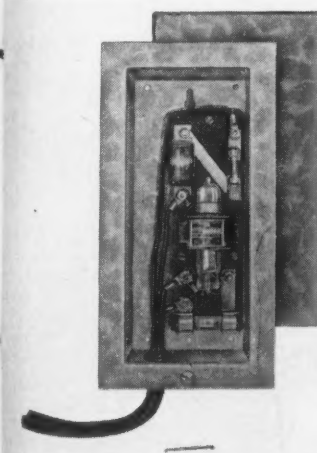
Schematic representation of 5-tank immersion setup for application of Rustshield 2 phosphate coating. Where a vapor degreaser is used for cleaning, the first two tanks can be eliminated

neutralizing passivating solution. Immersion racks or tumbling barrels used in the process may be of any design that accomplishes exposure of greatest area of parts.

(Rustshield 2 phosphatizing compound and the Rustshield process are developments of Octagon Process, Inc., Dept. CP, 15 Bank St., Staten Island 1, N. Y. . . . or for more information check CP 9464 on handy form, pages 2 and 3.)

Weather-resistant case and mercury contacts make relay rugged . . .

designed for outdoor mounting, it can be used for area lighting and similar tasks



Handles 30 amp — needs little attention

may be of the normally open or normally closed type. Housing is a welded, galvanized case for pole or general outdoor mounting. Unit is described as requiring no maintenance, even when exposed to weather.

(Product of H-B Instrument Company, Dept. CP, 2633 Trenton Ave., Philadelphia 25, Pa. . . . or for more information check CP 9465 on handy form, pages 2 and 3.)

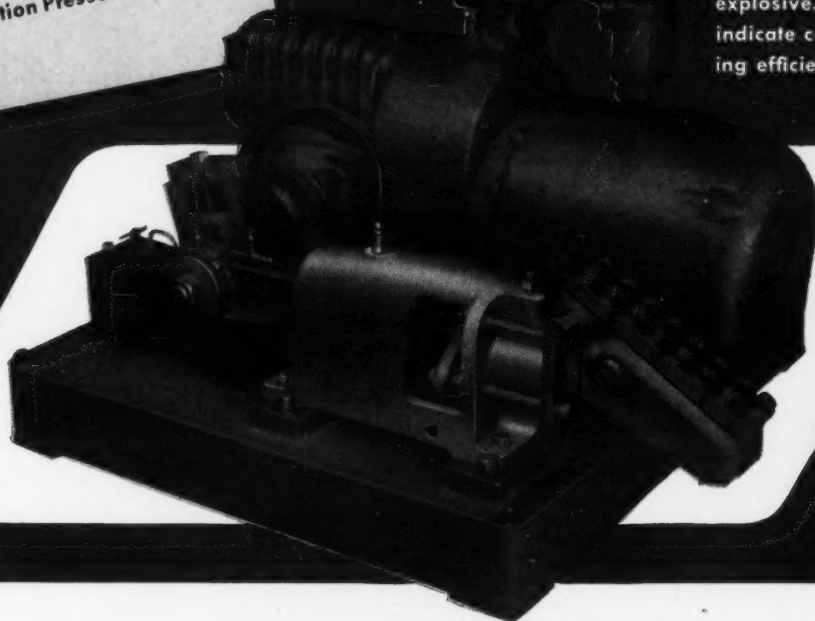
FEBRUARY, 1952

This is Controlled Volume Pumping

Handling liquefied gas:
pumping 8.0 gph of
compressed liquid
Ethylene at 15,000 psi.
Temperature 0° C.
Suction Pressure 1000 psi.

THIS MILTON ROY CONTROLLED VOLUME PUMP DOES THE JOB . . .

It's a Milton Roy High-Pressure Simplex, operating in the research lab of a major chemical company. Here are a few of the requirements this pump satisfies: Slow speed on the suction stroke to prevent "flashing" of the liquid Ethylene into a gas; special metallic packing which eliminates all leakage, withstands the 15,000 psi compression; refrigeration through the jacketed liquid end to maintain the Ethylene in a liquid state; explosion proof operation—liquid Ethylene mixed with prescribed percentage concentrations of air is explosive. Field reports indicate complete operating efficiency of this unit.



The successful pumping of a hydrocarbon of the peculiar and difficult nature of liquid Ethylene indicates the versatility of Milton Roy Controlled Volume Pumps. The fact that liquid Ethylene is an important building block for many organic compounds—used in anti-freezes, plastics, insecti-

cides, resins etc.—makes high-pressure pumping of this liquid in controlled volume an industrial necessity.

And for those diversified liquids usually considered as gases at normal temperatures and pressures—carbon dioxide, Butane, Vinyl Chloride, Propane, Propylene, to mention just a few,

Milton Roy Controlled Volume Pumps have pin-point application. They give flawless service.

Call the Milton Roy representative listed in your classified telephone directory for additional information on Milton Roy Controlled Volume Pumps for your specific process problem. Or write us direct.



MILTON Roy COMPANY

1354 EAST MERMAID LANE, PHILADELPHIA 18, PA.

MANUFACTURERS OF CONTROLLED VOLUME PUMPS AND AUTOMATIC CHEMICAL FEED SYSTEMS

When inquiring check CP 9466 on handy form, pgs. 2-3

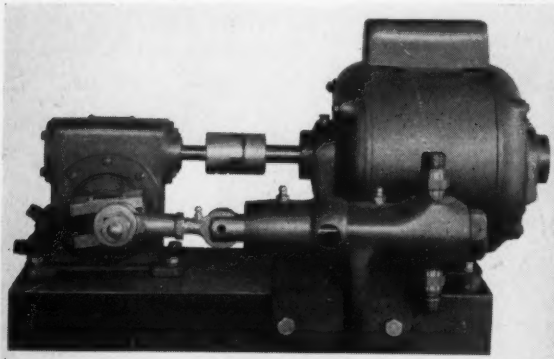
**Operation and maintenance
of rugged plunger pump
simplified by design . . .**

changing motor, interchanging or adding parts makes it useful on many jobs at low flow rates

Uses: General purpose use where positive action is needed in small scale work. Also used for boiler feedwater treatment, bottling, laundry and dry cleaning.

Features: Versatile design with interchangeable parts and motors makes the pump able to handle many jobs; makes maintenance simpler.

Description: Model H-20 pump is a reciprocating pump powered by a 1/4 hp motor. Simplex unit can be converted to duplex by adding necessary parts. Both 5/8" and 7/16" bores are available. Stroke of 1 1/4" (adjustable



9 x 16" pump weighs 50 lb

down to 0) is produced 74 times a minute by any 1/4 hp NEMA motor. Top capacities of the unit working against 300 psi are: 5/8" bore, 6 gph; 7/16" bore, 3 gph. Whole unit measures only 9 x 16"; weighs 50 lb.

Suction and discharge valves are interchangeable and easily replaced. Packing cartridge is also easy to replace, when and if necessary. Pump is fitted with a flush stream connection to the stainless steel lantern ring in the packing gland. Plunger, ball-check and ball-check housing, seats, and lantern ring are all stainless steel. Frame and liquid end are cast iron.

(Built by Milton Roy Company, Dept. CP, 1300 E. Mermaid Lane, Philadelphia 18, Pa. . . . or for more information check CP 9467 on handy form, pages 2 and 3.)

**Use of airfoil-section blades
cuts noise, ups efficiency
of fans to 92% . . .**

eight large units of this construction are going into a pressurized boiler installation

Witness tests of a scale model fan wheel using airfoil-section blades have been completed. Ordinarily fan blades are simple rectangular metal plates. Whether flat or curved, they frequently do not approach an efficient "airfoil" design. Advantages of the improved section are evident in results of the test. Efficiency of the fans is 92% as compared with a usual 84% for conventionally bladed fans. A more dramatic testimonial to the design is the fact that noise produced by the fan (wasted energy as far as moving air is concerned) was reduced 65% over conventional models of the same power.

The teardrop shaped blades are curved backwards from their direction of rotation. Blade cross section is, of



A High C_Q Product Gives You

**1.
ACCURATE
PERFORMANCE**

**2.
OVER A LONG PERIOD**

**3.
WITH A MINIMUM OF
MAINTENANCE**

THE MASONEILAN 10,000 SERIES CONTROL VALVE IS

A High C_Q Product

In Control Valve Performance the No. 1 Quality Factor is

Accuracy

A number of other quality factors enter into the design and manufacture of a control valve which provides "accurate performance, over a long period, with a minimum of maintenance". Such interrelated factors as rugged mechanical construction; selection of materials, types, sizes, and associated equipment; convenience in servicing, etc. are important. But without accurate performance these are meaningless.

Here is how Masoneilan Control Valves are designed and built to assure this accurate performance:

Correct Flow Characteristics

Plug contours designed and flow tested to provide accurate flow characteristics over widest practical range. A variety of precision machined plugs permits selection of most suitable construction as well as the desired flow characteristic for the service conditions.

Wide Flow Range

Low minimum flow (because of smallest practical clearance between plug and seat ring obtainable by precision machining), large diameter seat rings and long stroke combine to insure wide usable flow range.

Large Body Flow Areas

provide required C_v with minimum pressure drop due to body restrictions.

Responsive, Positive Diaphragm Motor

with large diaphragms, pre-formed to provide sensitivity and power, to maintain effective

In selecting control valves consider first the "Accuracy of Performance" quality factor — but evaluate the other quality factors too — the factors that insure accuracy "for a long period, with a minimum of maintenance". For the sum of *all* quality factors is the C_Q (Quality Coefficient) and in comparing cost remember that the *real* cost includes invoice price plus cost of maintenance and down-time. Thus for comparison, among comparably priced valves the best buy is the one with the highest Quality Coefficient —

$$\text{for Real Cost} = \frac{\text{Price}}{C_Q}$$

MASON-NEILAN REGULATOR CO.

1208-A ADAMS STREET, BOSTON 24, MASS., U.S.A.

Sales Offices or Distributors in the Following Cities: New York • Syracuse • Chicago • St. Louis • Tulsa
Philadelphia • Houston • Pittsburgh • Atlanta • Cleveland • Cincinnati • Detroit • San Francisco
Salt Lake City • El Paso • Boise • Albuquerque • Charlotte • Los Angeles • Denver
Appleton • Corpus Christi • New Orleans
Mason-Neilan Regulator Co., Ltd., Montreal and Toronto

area throughout valve stroke and to minimize hysteresis. Calibrated springs for 3-15 or 6-30 psi range. Stop in upper diaphragm case establishes correct initial diaphragm position, avoiding faulty adjustment.

Accurate Alignment

from diaphragm to blindhead, insured by pre-formed diaphragm; by precision control of clearance in stuffing box parts, guide bushings and plug guide section; by piloting of seat rings in body bridge wall; by piloting one-piece bonnet and blindhead in body; by rigid fastening of diaphragm motor to body by heavy forged steel drive nut.

Minimum Friction

insured by accurate alignment; by finish of honed and highly polished valve stems; by finish of extra deep stuffing box parts; by self-aligning frictionless guide provided by diaphragm; by oilite bronze lower guide.

CONSTRUCTION & MAINTENANCE

course, similar to that of an airplane wing. Such a blade exerts positive pressure on the air over its entire face from the leading edge to the trailing edge. As a result, air flow is smooth; has a minimum of turbulence.

Eight of these fans are to be installed at the Astoria Station of the Consolidated Edison Company, New York City. They will be used in tandem-series, two sets of two on each of two boilers. (Pressurized boilers will be enclosed in an airtight housing — will not use standard induced draft fans.) Each of these sets, driven by a 1250 hp motor, will have an efficiency of 86%, and even higher at partial loads. In addition to the airfoil section, they are provided with vane control to match characteristics with any load they may handle.

While the blades are more costly, having a hollow construction with longitudinally welded supporting struts, they are expected to be economical to use. Reduced power consumption, it is reported, will pay off the premium during the normal write-off life of the fan.

(Reported by Sturtevant Division Air Handling Research Laboratory, Westinghouse Electric Corporation, Dept. CP, 306 Fourth Ave., Pittsburgh 30, Pa. . . or for more information check CP 9469 on handy form, pages 2 and 3.)

Forty pages deal with unit air conditioners

Forty-page engineering bulletin describes unit air conditioners, both horizontal and vertical models, in sizes from 875 to 22,000 cubic feet of conditioned air per minute. Units can incorporate air humidifying, dehumidifying, washing, and cleaning where desired. All parts are clearly identified by photographs. Capacity tables, diagrams, and charts are included for aiding selection of proper unit for given conditions. An example in selection is worked out.

Bul 3703A is issued by Buffalo Forge Company, Dept. CP, 490 Broadway, Buffalo, N. Y. When inquiring specify CP 9470 on handy form, pages 2 and 3.

Use same hose for water, oils

Uses: General-purpose hose for all types of fluids — air, water, grease, oils, gasoline, paints.

Features: Highly resistant to petroleum products and to abrasion.

Description: Abrasoflex rubber hose with one- or two-braid rayon body is available in a range of sizes: ID from 3/16 to 1", OD from 7/16 to 1 1/2", for working pressures of 250 lb. Hose is not recommended for service with lacquers or their solvents, vegetable or animal oils.

(Product of the Mercer Rubber Corp., Dept. CP, 66 Reade St., New York 7, N. Y. . . or for more information check CP 9471 on handy form, pages 2 and 3.)

Includes extensive data on mechanical seals

Complete information on maker's Kloxure oil and grease seals for bearings is available in 100-page, 2-color catalog. Illustrations of all types, typical applications, and a complete list of specifications are included. Details on mechanical pressure seals for rotary shafts is included. Cat 10 is issued by the Garlock Packing Company, Dept. CP, Palmyra, N. Y. When inquiring specify CP 9472 on handy form, pages 2 and 3.

GET YOUR *Filter Facts* STRAIGHT



ON SHRIVER FILTER PRESSES

- Lowest in cost per square foot of filtering area.
- Versatile—can be used on any filterable material, no matter how heavy, thick or viscous.
- Recovers solids — reasonably dry, firm, easy to handle.
- Clarifies perfectly, decolorizes, deodorizes, germproofs.
- Washes, extracts, to recover or remove soluble contents. Steams, melts or redissolves cake.
- Designed in any capacity, for any temperature and any pressure up to 1000 p.s.i.
- Made of any metal, wood, rubber, plastic for use with any filter media.

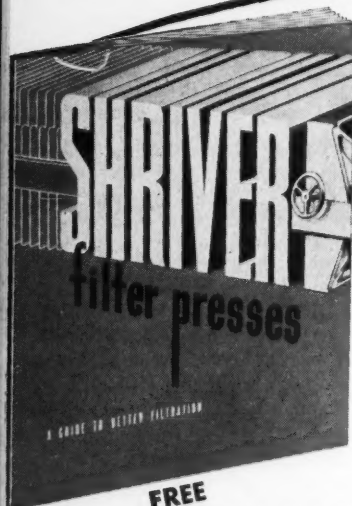
If the slings and arrows that are hurled at the head of the filter press were to find their mark, the poor old boy would have been a little-mourned corpse long ago. But strange to say, filter presses—and Shriver makes the major percentage of them—constitute the largest selling pressure filtration equipment in the process industries today and are likely to continue so for many years to come.

Despite claims for other filter types as to better filtering rates, faster operation, easier cleaning, etc., the facts prove the filter press a better overall investment, doing its consistently good job in more places on a greater variety of products under a broader range of operating conditions than any other filtering equipment ever developed. That's worth thinking about.

Gives STRAIGHT FACTS on Filtration

The new Shriver book serves as a valuable guide in selecting the right type of filtration equipment for improving your process and product. It tells—

1. How to Select Your Filter
2. How to Determine Type, Capacity, Construction
3. How to Determine Cost of Your Filter
4. Applications of Filters



FREE

MAIL TODAY

T. SHRIVER & COMPANY, Inc., 846 Hamilton St., Harrison, N. J.
Send me New Shriver Filtration Book.

Name _____ Title _____
Company _____
Address _____
City _____ Zone _____ State _____

When inquiring check CP 9473 on handy form, pgs. 2-3

CONSTRUCTION

Flexible metal hose is pressure tight and seamless . . .

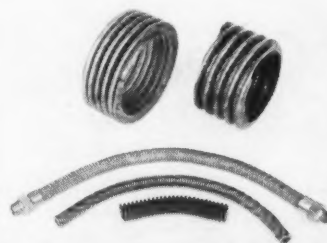
flexing is distributed between inner and outer convolutions

Uses: Conveying liquids or gases.

Features: Offers resistance to high temperatures, corrosion, and abrasion.

Description: Uniflex is a flexible bronze metal hose that is both seamless and pressure tight. This hose of helical construction distributes the flexing between the inner and outer convolutions—promoting greater flexibility and longer life, thereby.

For additional safety, Uniflex is also



Flexible metallic hose for conveying liquids or gases

produced with a covering of one or more layers of tensile bronze wire braid.

(Announced by Titeflex, Inc., 500 Frelinghuysen Ave., Dept. CP, Newark 5, N. J. . . . or for more information check CP 9474 on handy form, pages 2 and 3.)

Sturdy steel stools stand up under tough use . . .

available in 5 heights, 80 models and steel or pressed wood seats

Uses: In the laboratory, at drafting boards, etc.

Features: Welded, non-breakable construction; no rough edges on legs to snag or tear clothing.

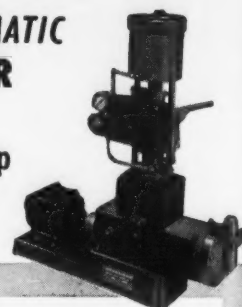
Description: Steel stools built by Lyon Metal Products will stand up under abuse and yet are designed for seating comfort. Legs taper out to insure against tipping; channel brace, a uniform distance below the seat, provides a comfortable foot rest.

These stools are available in 5 heights and 80 models and may be had with steel or pressed wood seats. Adjustable steel backs also are available.

(Manufacturer is Lyon Metal Products, Inc., Dept. CP, Aurora, Ill. . . . or for more information check CP 9475 on handy form, pages 2 and 3.)

Lapp AUTO-PNEUMATIC PULSAFEEDER

piston-diaphragm
metering chemical pump
with automatic output
control



Applicable to all pneumatic or electro-pneumatic instrumentation. Provides automatic metering in response to variable flow, pH, temperature, liquid levels, pressure, or other processing variables. Operates at constant speed—variable flow results only from variation in piston stroke length, controlled by pneumatic cylinder. Pumping head isolates chemical being pumped.

WRITE for complete description and specifications. Lapp Insulator Co., Inc., Process Equipment Division, 495 Maple St., LeRoy, N. Y.

Lapp

PROCESS EQUIPMENT

CHEMICAL PORCELAIN VALVES • PIPE • RASCHIG RINGS
PULSAFEEDER • CHEMICAL PROPORTIONING PUMPS

When inquiring check CP 9476 on handy form, pgs. 2-3

FASTER HEAT TRANSFER for 50% of the COST



with
PLATECOILS
(REPLACE PIPE COILS)

A Platecoil has more heat transfer area than a pipe coil twice its size. Thus it takes only half as much Platecoil to heat a given area. You have 50% less steel to pay for so you can save nearly 50% in initial cost. The Platecoil takes only half as much space in the tank. The greater BTU transfer per unit area of Platecoil also means faster heating or cooling. Platecoils require less maintenance and can be removed without dumping the solution.

Send for complete
technical manual and
descriptive Bulletin
No. P54.

PLATECOIL
DIVISION
KOLD-HOLD MFG. CO.
LANSING 4, MICHIGAN

When inquiring check CP 9477 on handy form, pgs. 2-3

CHEMICAL PROCESSING

**Coating fuses to metal,
gives protection
at 1000°F . . .**

aluminum finish highly adherent and flexible, remains brilliant, resists corrosion, thermal shock

Uses: Aluminum paint for protection of interior or exterior hot metal surfaces subject to 200-1000°F, and to 1500°F under certain conditions. Finding application on boiler fronts, breechings, steam lines, mufflers, ovens, engines, manifolds, condensers, compressors, exhaust lines, chimneys, stacks, incinerators, heat treating equipment, melting pots (outside surfaces) for zinc and aluminum, etc.

Features: Silicone resin base is responsible for exceptionally high resistance to heat. The coating fuses to the metal surface when heated, leaving a very brilliant aluminum, adherent, flexible finish. High resistance to weathering, acid fumes, moisture, and thermal shock is exhibited.

Description: Thermalite 'High Heat' aluminum paint is offered in a 2-part container — aluminum paste in one part, and liquid silicone resin in the other. When all the liquid is gradually added to the paste at the time of use, the mix can be sprayed without thinning (thinning will reduce durability).

Surfaces to be coated should be free from dirt, dust, rust, old paint, oil, grease, and moisture. A thin coat of Thermalite is applied; then the temperature is raised to 200-400°F and held for one hour before raising to a higher heat.

Some interesting reports have been issued on the application of Thermalite: a coated steel test panel was heated to 2800°F with a cutting torch, producing bubbles in the metal and turning the coating black where the flame was applied. Nevertheless, the coating was still intact. This is an extreme case, but shows what might be expected.

A similar test panel was dipped into molten aluminum at a foundry. Although a bit of the coating was removed, the founder anticipates coating his short-lived steel ladles for melting aluminum. Even if the coating is applied 2 or 3 times a day, he feels it will be a big saving to him.

(Thermalite is a product of The Tropical Paint & Oil Company, Dept. CP, Cleveland 2, Ohio . . . or for more information check CP 9478 on handy form, pages 2 & 3.)

**Fittings now strongest part
of piping systems rather
than weakest . . .**

greater wall thickness and added thickness at stress points included in line of alloy welding fittings

Uses: Complete line of welding fittings for high-temperature and high-pressure piping systems.

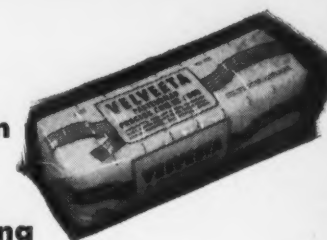
Features: Greater wall thickness and added thickness at stress areas assure a strong fitting with long service life — actually make the fitting the strongest part of a piping system rather than the weakest portion.

Description: Key-Kast line of alloy welding fittings and flanges is available in all sizes and schedule numbers. Line meets ASA, ASME, and ASTM standards. Line is available in low and intermediate alloys, as well as in various types of stainless steel. A boss is provided on all fittings for tapped openings.

(Key Company, Dept. CP, East St. Louis, Ill. . . . or for more information check CP 9479 on handy form, pages 2 and 3.)

BAKER PERKINS

**Type "T" vacuum mixers
give fast, efficient production
of sanitary paper-coating
compounds for food packaging
at Marathon Corporation**



In the food packaging industry, extreme care must be exercised to prevent any possibility of contamination of the packaging materials. That's why Marathon Corporation, Menasha, Wisconsin, uses Baker Perkins Type "T" Vacuum Mixers to produce the sanitary compounds that are used to coat papers for wrapping foods. One of these three-hundred gallon B-P Mixers at Marathon will handle a charge of 2000 lbs. and develop a maximum of about 100 h.p.

Baker Perkins makes a complete line of Vacuum Mixers for just about every processing operation. They will help speed production and improve the quality of your product. Write today for complete information.



BAKER PERKINS INC.

CHEMICAL MACHINERY DIVISION
SAGINAW, MICHIGAN

When inquiring check CP 9480 on handy form, pgs. 2-3

ELIMINATE SCREENING BOTTLENECKS



**WITH A
SWECO
SEPARATOR**



**SINGLE OR MULTI-
DECK WET OR DRY
CLASSIFYING AND
DEWATERING**

The SWECO Separator with its unique screening action is continually eliminating screening bottlenecks in processing industries of all types. Its capacity per square foot of screening area is greater than for any other screening device known. The life of the screen cloth is guaranteed and long exceeds expectations of experienced users, reducing down time and maintenance costs. Only three moving parts; no substructure vibration; no V-belt drives. Completely contained unit ready for operation when electrical power connection is made. Write for complete details.



The SWECO SEPARATOR
Division of SOUTHWESTERN ENGINEERING COMPANY
4800 SANTA FE AVENUE • LOS ANGELES 58, CALIFORNIA

When inquiring check CP 9481 on handy form, pgs. 2-3

CONSTRUCTION

**Dual purpose valve
usable in turbine
bypass lines . . .**

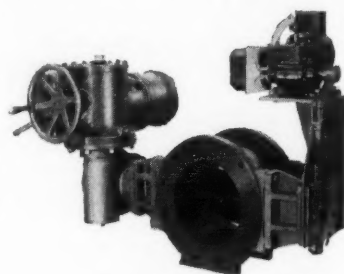
designed for high pressure drop and small volume, or conversely

Uses: In a turbine bypass line for controlling the required quantity of water when turbine is not in use or operating at reduced capacity.

Features: Dual function — either a high pressure drop and small volume or a low pressure drop and large volume.

Description: With both vanes motor operated, No. 818 valve consists of a 12" beveled vane which seats against the body side wall and a 4" vane mounted in the center of the larger one.

Valve is equipped with 18-8 shafts,



Dual purpose valve

bronze bushings, and two lubricated stuffing boxes with two outboard bearings. It is available in various combinations of sizes for high and low temperature service; also, it can be used for either manual or automatic control.

(Manufactured by R-S Products Corp., Dept. CP, 4600 Germantown Ave., Philadelphia 44, Pa. . . or for more information check CP 9482 on handy form, pages 2 and 3.)

Nickel-free electrode for cast iron

Uses: In welding cast iron parts.

Features: Stated to produce an extremely high-tensile weld.

Description: Nickel-free electrode, EutecTrode 27, produces a deposit which is similar to high tensile, high carbon steel. It is not, however, intended as a replacement of nickel-bearing electrodes in all applications.

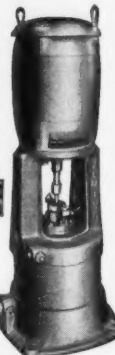
(Manufactured by Dept. "P", Eutectic Welding Alloys Corp., Dept. CP, 172nd St. and Northern Blvd., Flushing, N. Y. . . or for more information check CP 9483 on handy form, pages 2 and 3.)

Multi-Stage High Pressure Vertical Centrifugal Pumps

**EFFICIENT
PUMPING**



Sectional and exterior views of 4-stage pump Fig. 6606-4.

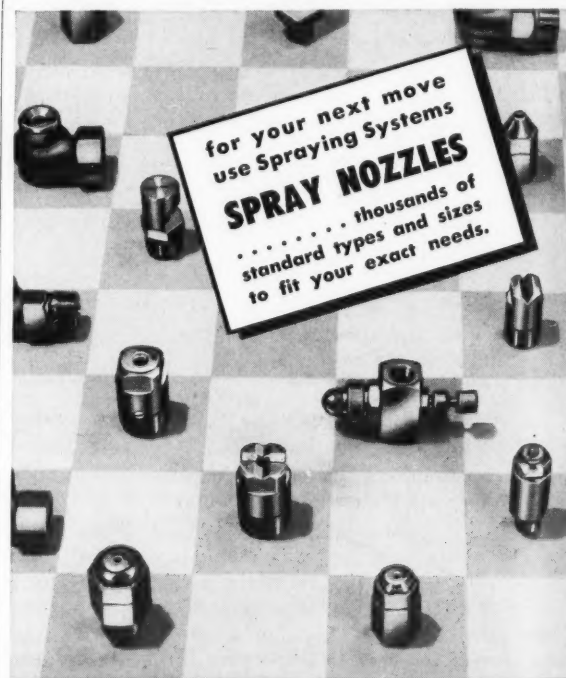


● Applications: Boiler feed service where temperatures do not exceed 250°F. Many other uses where liquids handled are non-corrosive to iron and bronze. Pumps furnished in 2, 3, 4 or 5-stage construction. Capacities from 10 to 45 G.P.M. Write for complete details.

THE DEMING COMPANY
522 Broadway • Salem, Ohio

**DEMING
PUMPS AND WATER SYSTEMS**

When inquiring check CP 9484 on handy form, pgs. 2-3



SPRAYING SYSTEMS CO. ENGINEERS AND MANUFACTURERS
3216 Randolph Street Bellwood, Illinois
WRITE FOR General Catalog No. 22 . . . or
Pneumatic Atomizing Nozzle Catalog No. 23

When inquiring check CP 9485 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Design improvements up capacity of stainless steel mills . . .

lab model processes up to 320 gal per 8-hr day, production models up to 5000 gal

Uses: In such operations as grinding, emulsifying, dispersing, homogenizing, disintegrating and blending.

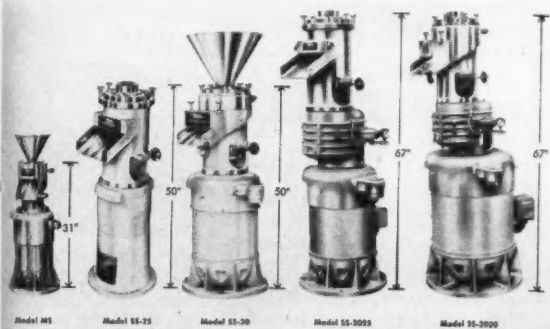
Features: Improvements in design and operating features have increased capacity of the mills. For instance, the 3-hp lab model has a plant-proven capacity of up to 320 gal/8-hr day; the 20 or 40-hp production model a proven capacity up to 5000 gal/day. Mill proper and all moving parts and accessories (including plumbing) are made of acid resistant stainless steel, although other construction materials, for non-corrosives, can be used. Processing chamber is polished and meets sanitary requirements.

Product quality and volume can be easily and closely controlled by external micrometer hand wheel. One full turn of the wheel causes only 0.001" difference in rotor stone elevation.

Description: All moving parts in the mill proper are contained in one removeable assembly. The shaft, upon the top of which the rotor stone revolves, is splined at both ends and is supported by two thrust bearings to assure positive radial alignment, an important consideration in fine grinding.

Shaft is attached to special drip-proof or explosion-proof motor by a flexible coupling which prevents thrust loads being put on the motor.

Special "Carborundum" rotor and stator stones have been developed for use with a variety of chemicals and pharma-



Vertical high-speed mills

ceuticals. In production models, these stones are 7" in diam and have a surface area of about 38 sq in. A set of stones comprising a rotor and stator weighs approximately 6¾ lb. Stones are self-sharpening and do not require dressing.

Some models are water-jacketed so the mill can be cooled or heated. Production type mills can be provided with a constant velocity pump operated by a variable-speed motor for moving material from pre-mix tanks to mill, and from mill to storage tanks or filling machines.

Also available for use with production type mills is de-aerating equipment with capacity of up to 1000 lb/min on heavy compounds.

(Speedline mills are made by Morehouse Industries, Dept. CP, 1156 San Fernando Rd., Los Angeles 65, Calif. . . . or for more information check CP 9486 on handy form, pages 2 and 3.)



Stuck by CORROSION

Who's stuck when corroded safety valves stick? Operators, production manager?

None of this was necessary. If you want 100% safety—and you'd hardly want less—there's one sure way to get it—specify BalanSeal or FarriSeal Valves.

Why? Because they can't stick, plug or corrode. Critical working parts are permanently isolated from any contact whatever with the lading.

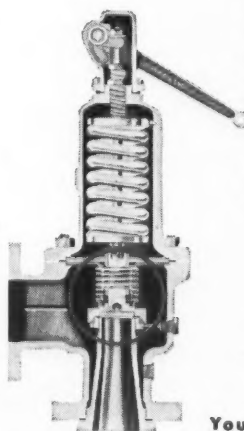
Because they're unaffected by back pres-

ures in the discharge manifold due to its own operation or to the opening of other valves in the line.

Because these features make it possible for you to use smaller discharge piping, an economy which is often substantially more than the valve cost.

You'll be interested in the engineering of BalanSeal and FarriSeal Valves—design which is rapidly gaining acceptance in hundreds of successful installations.

Ask for our "8-Minute Brief."



Farri's ENGINEERING CORP.
406 COMMERCIAL AVE., PALISADES PARK, N. J.

Your Safety's REAL With FarriSeal

When inquiring check CP 9487 on handy form, pgs. 2-3

1190-A

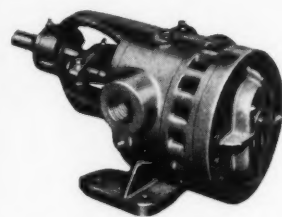
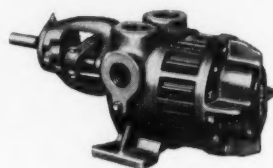
Pumps

FOR MANUFACTURING PETROLEUM, MARINE AND PROCESS INDUSTRIES

MODELS FROM 3/4 TO 300 G.P.M. — CAPACITIES TO 1000 P.S.I.
SPEEDS UP TO 1800 R.P.M. FOR PUMPING CLEAN LIQUIDS

SERIES F

Four-port design offers 8 optional piping arrangements. Equal size helical gears run in axial hydraulic balance. Standard or bronze fitted; packed box or mechanical seal. Up to 300 P.S.I.—1 to 300 G.P.M. for clean liquids.

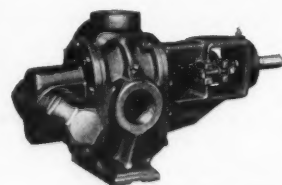
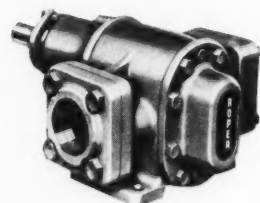


SERIES H

Widely used for hydraulic mechanisms and other applications where high pressures are required. Spur gears provide high volumetric efficiency. Packed box or mechanical seal. Pressures to 1000 P.S.I.—5 to 75 G.P.M. sizes.

SERIES K

For hydraulic service, fuel transfer or fuel supply. Features helical gears and exclusive Venturi suction and discharge principle in 10 through 50 G.P.M. sizes. Packed box or mechanical seal. 150 P.S.I.—3/4 to 50 G.P.M.



SERIES 3600

For general purpose work handling thin or thick liquids with suction lift up to 15 feet. Standard or bronze fitted; with or without built-in relief valve. Pressures to 60 P.S.I.—40 to 300 G.P.M.



ROPER
Rotary Pumps

GEO. D. ROPER CORPORATION
742 Blackhawk Park Ave.
Rockford, Illinois

When inquiring check CP 9488 on handy form, pgs. 2-3

CONSTRUCTION

Three models added to cabinet type unit heaters . . .

offer attractive appearance and quiet operation

Uses: Particularly designed for heating doorways or other areas where air must be discharged horizontally.

Features: Twin fans are balanced to eliminate vibration and contribute to quiet operation.

Description: Three models which have been added recently to The Trane Company's line of Force-Fluo heaters are: a free-standing unit, Type FG; a semi-recessed design, Type SG; and a completely recessed cabinet, Type RG.

All incorporate various design improvements including a cabinet front removable by loosening two quick-acting cam locks, grills that are integral parts of the cabinets, and a header system that permits concealed piping in any position.

Cabinets are constructed of 16-gage furniture steel and finished in Sumac Brown wrinkle enamel to enhance the external appearance. All units can be installed in either steam or hot water systems, with capacities up to 105,000 Btu.

(Available from The Trane Co., Dept. CP, La Crosse, Wis. . . or for more information check CP 9489 on handy form, pages 2 and 3.)

Fast-drying primer for hard-to-finish materials . . .

primer's flexibility allows parts to be fabricated afterwards

Uses: Undercoating for polished chrome, stainless steel, zinc, glass, brass, aluminum, and molded phenolics.

Features: Extreme flexibility allows parts to be formed, extruded or blanked after they are finished.

Description: Vinyl plastic-base primer, VB 282, offers excellent resistance to salt spray, humidity, abrasion and solvents. It may be applied by dip or spray methods and air-dries in 15 min.

Available in black, VB 282 is particularly well suited for anchoring protective coatings applied to military and defense products made of the previously mentioned hard-to-finish materials.

(Manufacturer is United Lacquer Mfg. Co., Dept. CP, 1001 W. Elizabeth Ave., Linden, N. J. . . or for more information check CP 9490 on handy form, pages 2 and 3.)



Powerful hammer-like blows delivered by SPO air vibrators assure steady jam-free flow of granular or powdered materials. These dependable, low-cost units prevent clogging and packing in bins, hoppers and chutes.

All SPO vibrators incorporate a special corrosion-proof bronze alloy cylinder liner that provides full-power starting, high-speed operation, thorough lubrication and maximum service life.

SPO offers a complete range of types and sizes to meet every vibration requirement.

Write today for Bulletin 50
for complete details.

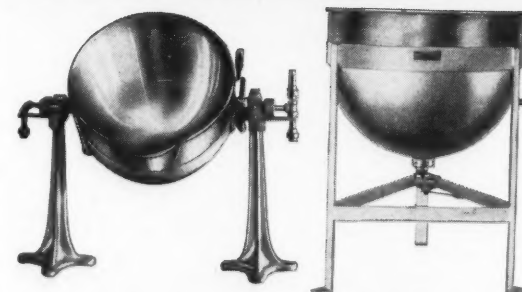


386 SI

INCORPORATED

6531 Grand Division Ave. • Cleveland 25, Ohio

When inquiring check CP 9491 on handy form, pgs. 2-3



Descriptive Bulletins on Request

LEE METAL PRODUCTS CO. INC.
418 PINE STREET . . . PHILIPSBURG, PA.

ALL LEE KETTLES ARE MADE TO A.S.M.E. CODE

When inquiring check CP 9492 on handy form, pgs. 2-3

CHEMICAL PROCESSING

**Provides control center for
2 or more AC motors of
up to 200 hp, 600 v . . .**

unit designed to withstand short circuit stresses up to 25,000 amp

Uses: Wherever two or more AC motors (up to 200 hp, 600 v) are controlled from a central location.

Features: A 4" vertical trough (with cable supports) runs the full length of each section, providing adequate space for wiring. Inspecting and servicing starter units is easy, because they are removable and all components are mounted on the lightweight frame.

Description: Motor Control Centers CR 7092 provides a simplified method of installing and servicing in a central location AC combination motor starters in NEMA sizes 1 through 5, as well as lighting panels and associated equipment for a group of motors. Center withstands short circuit stresses up to 25,000 amp.

Sections, each measuring 20" deep, 20" wide, and 90" high, join together to form a free-standing, completely dead-front, NEMA I enclosed, control assembly. "I"-beam construction and full-length floor sills of the rust-resistant enclosure make for a rigid center which can be easily positioned by means of a lifting angle.

Starter units may be installed from the front or rear of sections which are designed in even multiples of 14 (height of NEMA sizes 1 and 2 is 14") — allowing for a variety of arrangements to be made and providing interchangeability. Speed latches lock starter units into position.

Replacement of starter units is facilitated by positive-action positioning guides which insure correct alignment of starter to vertical bus.

(Motor Control Centers CR7092 are manufactured by General Electric Co., Dept. CP, Schenectady 5, N. Y. . . or for more information check CP 9493 on handy form, pages 2 and 3.)

**Condensed, readable account
of synthetic plastics**

For those desiring a quick review of what plastic materials are all about, this 21-page bulletin is a handy source. Usual host of technical data is omitted in favor of a general and very readable treatment of the subject. Discussions deal with the following: thermosetting vs thermoplastic materials, description of 12 major plastic types, fabrication of laminates and their uses, molding operations, suggestions for designing plastic parts, and industrial applications.

Photographs and illustrations accompany the text. "Facts About Plastics" is issued by The Richardson Co., Dept. CP, 2730 Lake St., Melrose Park, Ill. When inquiring specify CP 9494A on handy form, pages 2 and 3.

**Surface active chemicals
for specific uses**

Listing of surface active chemicals especially tailored for the drug, cosmetic, pharmaceutical, agricultural, insecticide, and general processing fields is presentation of 2-color folder. Stressed is a service designed to develop a product to meet specific requirements.

"Emulsol Products List" is issued by The Emulsol Corporation, Dept. CP, 59 East Madison St., Chicago 3, Ill. When inquiring specify CP 9494B on handy form, pages 2 and 3.

wherever you
need stainless steel
tubing...

TRY TRENTWELD!

● Stock lines in food, paper, and chemical plants; heat exchanger units in processing industries; cooling coils in breweries, beverage industry, dairies and dairy equipment...throughout all industry, wherever there's a stainless or high alloy tubing application, there you'll find TRENTWELD.

And it's to be expected! TRENTWELD is made in a tube mill by tube engineers who roll and weld stainless and high alloy tubing exclusively. Then too, TRENTWELD is available in a full range of sizes — 1/8" to 36" in diameter. This, coupled with Trent's convenient mid-continent location, means prompt delivery of what you want ...when you want it. If yours is a stainless or high alloy tubing requirement: Call on us.

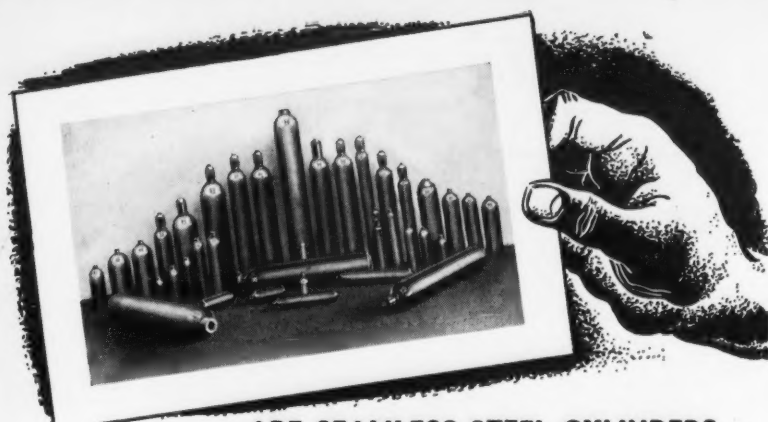
TRENTWELD

STAINLESS STEEL TUBING

TRENT TUBE COMPANY, GENERAL SALES OFFICES, EAST TROY, WISCONSIN

(Subsidiary of Crucible Steel Company of America)

When inquiring check CP 9495 on handy form, pgs. 2-3



ARE SEAMLESS STEEL CYLINDERS FOR HIGH-PRESSURE GASES IN YOUR PICTURE?

If they are, buy Harrisburg. We manufacture a complete line for the storage and transportation of fixed, liquid, and medical gases. There are sizes, capacities, and types for every purpose . . . made to I.C.C. specifications . . . in domestic and export types. Write for catalogs and prices.

HARRISBURG
STEEL CORPORATION



Custom-Built Quality Products in Quantity
99 YEARS IN PENNSYLVANIA'S CAPITAL

Harrisburg 24 Pennsylvania

When inquiring check CP 9496 on handy form, pgs. 2-3

heart of the strainer

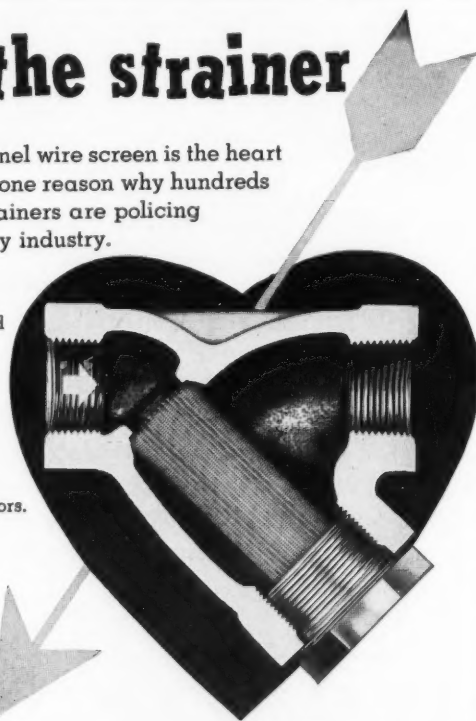
A high-grade, woven Monel wire screen is the heart of the Yarway Strainer—one reason why hundreds of thousands of these strainers are policing pipe lines in nearly every industry.

OTHER REASONS —

- cadmium plated bodies and screen caps
- straight threads, machined faces and spark-plug-type gaskets on screen caps
- ten sizes from 1/4" to 3"

Sold by 216 industrial distributors.
Write for Bulletin S-203.

YARNALL-WARING CO.
125 Mermaid Ave.
Philadelphia 18, Pa.



YARWAY STRAINERS

When inquiring check CP 9497 on handy form, pgs. 2-3

CONSTRUCTION

**Armored flexible cable
protects hydraulic
and air circuits . . .**

bundles of 4, 8 or 12 aluminum
or copper tubes encased within

Uses: Air and hydraulic circuits.

Features: Bends around corners or over obstacles. Requires no special support — standard pipe or conduit clips can be used to fasten it to walls or ceilings; or it can be laid along the floor, or set in concrete.

Coding of the tubes within cable permits easy identification and quick hook-up of each line at junction boxes.

Description: Standard outer covering of Armortube is constructed of continuous, heavy galvanized steel strip; bronze is available on special order.

Three standard combinations are available consisting of bundles of 4, 8 or 12 aluminum or copper tubes. A water-repellent insulating tape is wrapped around the tube bundle before it is encased in its outer covering.

Armortube cable is shipped in random lengths of approximately 500 feet. Thus long, continuous lengths are available so as to reduce connections to a minimum. Connecting points are concentrated into junction boxes which permit easy installation.

(Obtainable from Bailey Meter Co., Dept. CP, 1050 Ivanhoe Rd., Cleveland 10, Ohio . . . or for more information check CP 9498 on handy form, pages 2 and 3.)

**Preserves original lustre
of non-ferrous metals . . .**

clear lacquer highly resistant to common tarnishing agents

Uses: Clear, protective finish for non-ferrous metals. Suitable for use on brass, bronze, aluminum, platinum, copper, etc.

Features: Gives a hard finish and offers high resistance to tarnishing of body acids, alkalis, corrosive elements in the atmosphere. Said to preserve the original lustre of non-ferrous metals.

Description: BO562 is a water-white synthetic lacquer that is applied as a hair-thin coating by brushing, dipping, or spraying. Baking schedule is 20 minutes at 350°F or 30 minutes at 300°F. Gloss, semi-gloss, and flats are sheens available.

(Product of the United Lacquer Mfg. Corp., Dept. CP, Linden, N.J. . . . or for more information check CP 9499 on handy form, pages 2 and 3.)

**Atlantic Flexible Metal
Hose Offers**

FREEDOM FROM BREAKDOWNS

**due to VIBRATION,
MISALIGNMENT,
EXPANSION,
CONTRACTION.**

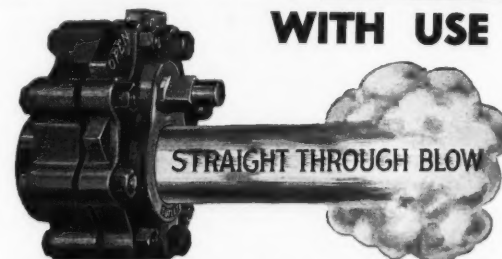
—and is better for conveying
steam, gases, molten
chemicals, oils, refrigerants,
tars, asphalt, alkalis, gaso-
line, light or semi-solids.
Seamless or Interlocking
construction in steel, stain-
less steel, bronze, 1/8" —
36" I.D. with appropriate
fittings.
Write for Bulletin 20D.
See our Catalogs in
Sweet's Files for
Product Designers
and Mechanical Industries.

Atlantic Metal Hose Co., Inc.

106 W. 64th St., New York 23, N. Y.

When inquiring check CP 9500 on handy form, pgs. 2-3

The Valve That **IMPROVES** WITH USE



In the EVERLASTING VALVE, the disc is always in contact with the sealing surface of the seat. Each time the valve is opened or closed, the disc moves across the seat with a rotating motion, and this self-lapping action continuously polishes the sealing faces, keeping the seal drop-tight.

And note these additional EVERLASTING features . . . straight-through flow . . . no lubrication required . . . quick operation . . . non-wedging. These unique valves are ideal for all blow-off, shut-off, equipment outlets and many other services, and are suitable for all liquids, vapors and gases. Write for bulletin today.

EVERLASTING VALVE CO., 49 Fisk St., Jersey City 5, N. J.
Trade Mark "EVERLASTING" Reg. U.S. Pat. Off.

Everlasting Valves

for everlasting protection

When inquiring check CP 9501 on handy form, pgs. 2-3

CHEMICAL PROCESSING

400 illustrations help solve flexible shaft problems

Advantages of flexible shafting and methods of application are fully described in 64-page bulletin. Illustrated are many types of end fittings, casings, adapters and shaft combinations that apply to the variety of standard sizes and types of shafts available. In addition, over 400 illustrations are given which will be of help to engineers in solving problems on remote control by the use of flexible shafts.

"Flexible Shafting" is issued by F. W. Stewart Manufacturing Corp., Dept. CP, 4311 Ravenswood Ave., Chicago 13, Ill. When inquiring specify CP 9502 on handy form, pages 2 and 3.

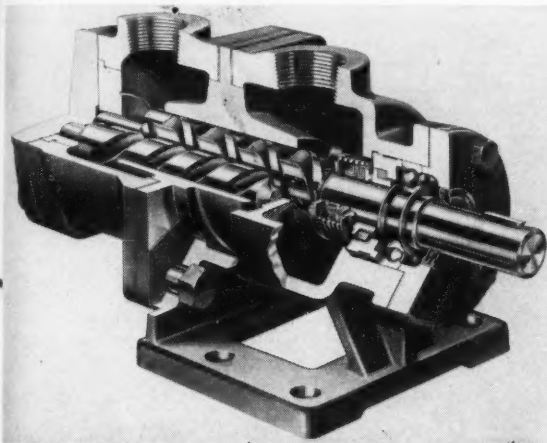
Capacities to 80 gpm and pressures to 275 psi sum up rotary pump . . .

particularly suited to high-speed operation; quiet, pulsation-free and compact

Uses: Handles light or viscous fluids in hydraulic systems, rotary and steam atomizing burners, governing systems and related types of service.

Features: Quiet and pulsation-free operation and compact design.

Description: Rotary positive displacement pump, De Laval-IMO A313B, is particularly suited for high-speed operation. It has three moving parts and can be used for



Offers savings up to 40% in original cost over similar IMO models

capacities to 80 gpm, pressures to 275 psi, and intermittent pressures up to 325 psi. It is stated to save up to 40% in initial cost over other IMO models for similar pressures.

(Announced by De Laval Steam Turbine Co., Dept. CP, Trenton 2, N. J. . . . or for more information check CP 9503 on handy form, pages 2 and 3.)

Corrosion-resistant fittings shown and detailed

Catalog on manufacturer's Speedline corrosion-resistant fittings illustrates types and sizes and describes features of the fittings which are available in several stainless steel fabrications. "Speedline Corrosion-Resistant Fittings" is issued by Horace T. Potts Co., Dept. CP, Erie Ave. and D St., Philadelphia 34, Pa. When inquiring specify CP 9504 on handy form, pages 2 and 3.

FEBRUARY, 1952

you save money (less waste)
you save time (almost automatic)
and you get

UNIFORM GRANULATION

with

**AIR SET
ROLLER MILL**

★ You save money when you produce granulated products with *AirSet* Roller Mills because there's less waste.

And new automatic design features save operators' time. You have instant and complete control of *AirSet* Roller Mills — one or a battery. Best of all, you get *uniform granulation with minimum fines*. Better feed distribution and uniform pressure at ends of rolls provide ideal grinding for preparation of most chemicals. Push-button control, automatic roll set and roll release and other design improvements give you new grinding efficiency and the closest approach to automatic milling yet devised! They save you money and time.

Contact your nearby A-C sales office for complete information or write to Allis-Chalmers, Milwaukee 1, Wisconsin.

A-3613



Motor and Texrope Drive available with *AirSet* Mill as a complete engineered unit.

AirSet and *Texrope* are Allis-Chalmers trademarks.

ALLIS-CHALMERS

Chemical Milling and Processing Equipment

When inquiring check CP 9505 on handy form, pgs. 2-3

ARE YOU
BOTHERED BY
ENTRAINMENT?

Look into METEX MIST ELIMINATORS

... and see how they will help
boost production and cut costs

Removal of liquids entrained in gases is simple . . . economical . . . effective—when you use Metex Mist Eliminators! As the mixture passes through the Mist Eliminator, the entrained liquid is wiped out and retained by the extensive KNITTED wire area—until it coalesces into drops that are large

enough to fall back through the rising flow. The gas passes on—freed from entrainment.

Efficiencies 95% or better • Little if any pressure drop • Can be installed in existing equipment • Made of practically any metal • No moving parts

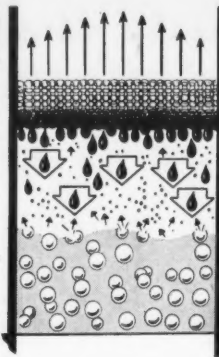
Worth looking into, isn't it? Ask for your free copy of "Metex Mist Eliminators", an 8-page brochure that's packed with facts. Or write us about your specific entrainment problem.

METAL TEXTILE CORPORATION

KNITTERS OF WIRE MESH FOR MORE THAN A QUARTER CENTURY

659 East First Avenue Roselle, N. J.

When inquiring check CP 9506 on handy form, pgs. 2-3



CONSTRUCTION

**For washing heavily soiled
fabrics of all types . . .**

special detergent is only washing
compound required

Uses: For washing all types of heavily soiled (greasy, paint-marked, etc.) fabrics. Suggested for overalls, coveralls, shop aprons, uniforms, towels, and wiping cloths.

Features: Rapid emulsifying action quickly removes grease and soil from fabrics, leaving them soft and absorbent without fading or streaking. No grease balls or coatings remain.

Called a "one suds" formula because it is the only washing compound needed (white fabrics usually require bleaching and paint rags require alkali addition, however).

Description: O & W Compound is a silicated detergent. Six to 12 pounds of the compound are used for every 100 pounds of fabric load. Addition is made to water at 90-100°F, then solution is brought to boil and held 25 minutes. Solution is next dumped and three or four 5-minute hot water rinses follow. Final 3-minute cold water rinse finishes washing.

(Product of the Diamond Alkali Company, Dept. CP, 300 Union Commerce Bldg., Cleveland 14, Ohio . . . or for more information check CP 9507 on handy form, pages 2 and 3.)

**Resurfaces floors of
concrete, stone
or brick . . .**

no heat or special skill required
for material's application

Uses: Floor patching and resurfacing material.

Features: Usable on floors of practically any composition—concrete, stone or brick. No heat or additional materials (sand, cement or stone) required for application; also, very simple task to work with material.

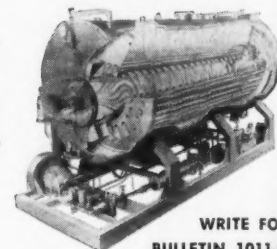
Description: Floors repaired with Trowel-In are ready for traffic in 18 hours. As a resurfacing material, Trowel-In does not raise the floor level appreciably as only a $\frac{3}{8}$ " thickness is required. As a patching material, it is stated to produce feather-edge repairs without necessity of chopping out the old floor.

Trowels in easily around machine bases, pipes, and other obstructions and is stated to show no shrinkage cracks.

(A product of Flexrock Co., Dept. CP, 3699 Cuthbert St., Philadelphia 4, Pa. . . or for more information check CP 9508 on handy form, pages 2 & 3.)

AMESTEAM
GENERATOR
I Bought One Because It's

**EASY TO INSTALL
EASY TO OPERATE
EASY TO CLEAN**



10 to 500 h.p.
15# to 200# w.p.
OIL or GAS

WRITE FOR
BULLETIN 1011-C

AMES IRON WORKS
BOX D-2, OSWEGO, N.Y.

Builders of Better Boilers Since 1848

When inquiring check CP 9509 on handy form, pgs. 2-3

What's

A "New Solution"?

It's an article in **CHEMICAL PROCESSING** describing a new way of solving a tough plant operating problem. In each issue you will find specific "case histories" showing how these processing problems were solved. Each article states the operating problem . . . explains the process used and gives details of how problem was solved . . . shows results secured.

Take a look at "New Solutions" articles in this issue — they might suggest a "solution" for some of your tough processing problems.

DAMASCUS TUBE COMPANY

STAINLESS STEEL TUBING AND PIPE
GREENVILLE, PENNSYLVANIA

A NEW SOURCE
FOR

*Stainless Tubing
and Pipe . . .*

SIZES 1/2" to 3"

Prompt Response to Your Inquiry

DAMASCUS TUBE COMPANY

STAINLESS STEEL TUBING AND PIPE
GREENVILLE, PENNSYLVANIA

When inquiring check CP 9510 on handy form, pgs. 2-3

CHEMICAL PROCESSING

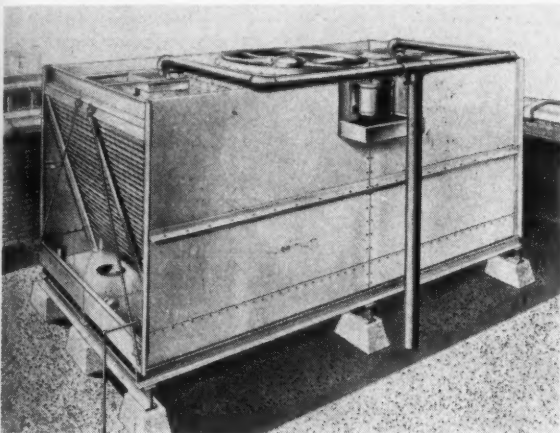
Low height and easy inspection reported for medium-capacity cooling towers . . .

fan takes air from both open sides of compact unit; seven standard sizes start at 50-ton capacity

Uses: Tower is designed for application wherever intermediate capacities are required. Cooling towers in this range are widely used in the power, petroleum, gas, chemical processing, and metal-working industries, and wherever air conditioning and refrigeration are used.

Features: Low height — $7\frac{1}{2}'$ for a 150-ton unit — means that tower detracts little or none from appearance of building; on many buildings, parapet walls completely conceal the tower. Pumping head and required fan hp are reported as extremely low. All parts — piping, nail-less redwood filling, basin fixtures, fan and motor, and distribution basin — are readily accessible for inspection and maintenance.

Description: The Marley Double-Flow Aquatower combines the high efficiency of the Marley Double-Flow design with the compact simplicity of the Marley Aqua-



Compactness, low height are two important features of cooling tower

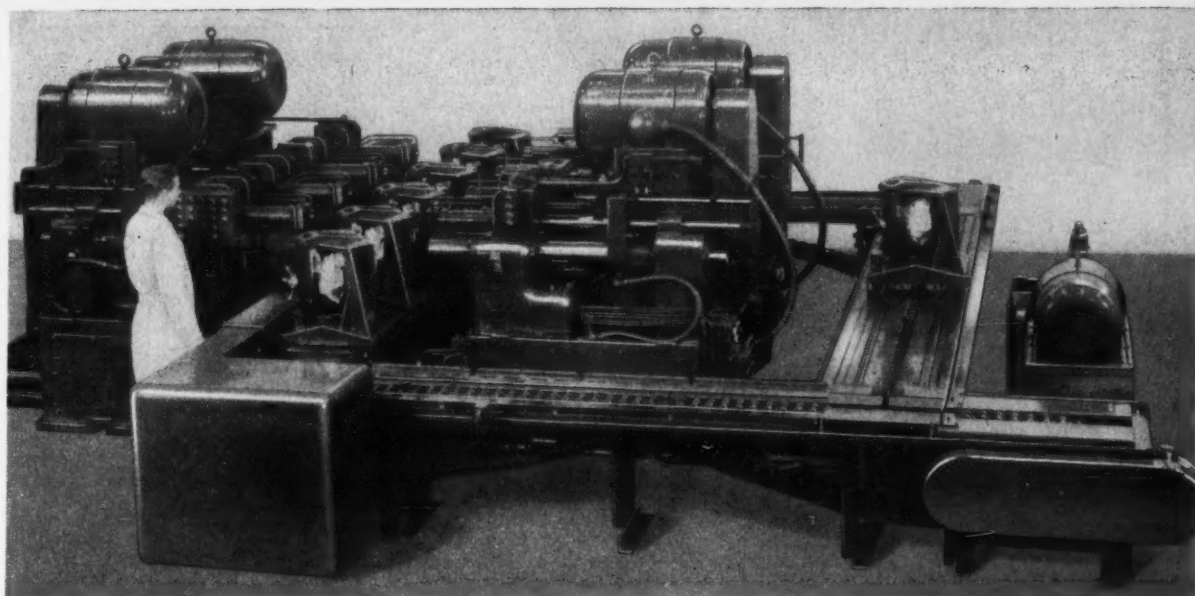
tower design. Up to this time, the Double-Flow design — one fan utilizing air from two completely open sides — has been used only on very large towers.

Tower comes in seven standard sizes, starting with a 50-ton unit. It is available in all-steel or wood with asbestos cement board casing. Tower weight is said to be evenly distributed over a wide area.

(Made by The Marley Company, Inc., Dept. CP, 222 W. Gregory Blvd., Kansas City 5, Mo. . . . or for more information check CP 9511 on handy form, pages 2 and 3.)

Complete tables on carbon and graphite brick

Listed in this catalog are the principal features of carbon, graphite and impervious graphite brick, and some of their typical metallurgical and chemical applications. Complete tables are given for brick sizes, shapes, grades and physical properties, with special information on graphite beams, blocks, plates and rods in sizes up to a maximum of 24 x 30 x 180". Cat Section S-6210 is issued by National Carbon Co., Division of Union Carbide and Carbon Corp., Dept. CP, 30 East 42nd Street, New York 17, New York. When inquiring specify CP 9512 on handy form, pages 2 and 3.



Cross Transfer-matic, with 10 Howell motors, helps speed aircraft production.

Drills, bores 80 cylinder heads per hour!

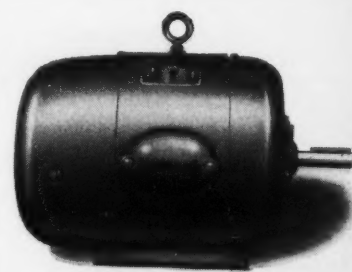
This Cross Transfer-matic drills and bores 80 aircraft engine cylinder heads per hour! That means a lot of engines for military or civilian planes.

Built for one of the industry's leading manufacturers, this machine automatically rough drills and forms valve pockets and spring compartments, and finish bores valve guideholes and valve insert and spring seats. The whole operation takes only 45 seconds!

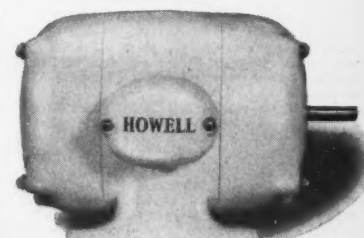
Ten precision-built Howell motors, ranging in size from one to 30 H.P., were specified

to drive the spindles, the hydraulic and coolant pumps, and the chip and fixture conveyors. Each Howell motor was chosen to fit its job exactly.

Howell engineers will be glad to work with you, too, to get top performance from your electric motor installations. They will design special motors if required, or recommend Howell motors in standard NEMA frame sizes from 1/6 to 200 H.P. So, for every job, especially your toughest ones, get in touch with the Howell representative in your city, or write directly to us today.



HOWELL Type K Motor. Offers constant performance in the presence of dirt, dust, fumes and moisture. Sizes from 3 to 150 H.P. at 1800 R.P.M. Either vertical or horizontal mounting.



HOWELL Sanitary Motors meet the most exacting standards of the dairy and food industries. They contain no pockets, cracks, or crevices. Available for vertical or horizontal mounting.

HOWELL ELECTRIC MOTORS COMPANY

Howell, Michigan



HOWELL MOTORS

HOWELL ELECTRIC MOTORS CO., HOWELL, MICH.

Precision-built industrial motors since 1915.

When inquiring check CP 9513 on handy form, pgs. 2-3

**DO YOU HAVE A HOPPER
FEEDING PROBLEM?
HERE'S THE ANSWER...**

**THE
VIBROLATOR**

Rugged, effective vibration without damage to your bins and hoppers when you use the patented Peterson pneumatic VIBROLATOR.

Effective all-directional vibration for moving stubborn materials in hoppers and bins. Instantly self-starting, no lubrication or maintenance needed. A variety of sizes available to meet all applications. Whatever your vibrator requirements, there's a Peterson Vibrolator to fit the job and do it more efficiently.

M

ARTIN

ENGINEERING COMPANY

KEWANEE 1, ILLINOIS

When inquiring check CP 9514 on handy form, pgs. 2-3

*Your needs—
OUR SPECIALTY*

One of six carloads of Heat Exchangers, Coolers, Condensers and Reboilers designed and fabricated by the Heat Transfer Division of DOWNINGTOWN for a chemical plant. Materials used consist mainly of Type 304 Stainless Steel . . . construction meets requirements of the A.S.M.E. Code.

DOWNINGTOWN solicits your inquiry for heavy duty shell and tube equipment fabricated of Aluminum, Inconel, Nickel, Phosphor Bronze, Copper, Silicon Bronze and various grades of Carbon Steel. Some of these are welded by the Inert-Gas-Metal-Arc method. DOWNINGTOWN is experienced in building equipment with Bimetallic, Finned Tube and Impregnated Graphite.

Design and construction meet requirements of A.S.M.E. Code or other agency specified by customer. Equipment of our design is sold on a guaranteed performance basis or we will fabricate to customer's drawings. Modern facilities available for radiographing where required. Remember: "Your Needs are Our Specialty!"

Write on your letterhead for DOWNINGTOWN literature on shell and tube heat exchangers.

**NEW YORK OFFICE
30 CHURCH STREET**

DOWNINGTOWN IRON WORKS, INC.
DOWNINGTOWN, PA.
STEEL & ALLOY PLATE FABRICATION
HEAT EXCHANGERS

When inquiring check CP 9515 on handy form, pgs. 2-3

CONSTRUCTION

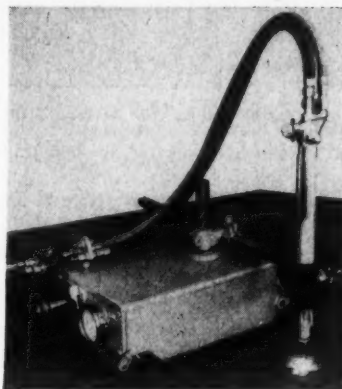
**Gas cutting-machine
is track guided
and portable . . .**

any required speed (within range)
set by finger tip adjustment

Uses: For cutting straight lines, circles and arcs with a square or beveled edge, and cutting irregular shapes when it is properly equipped.

Features: Gear shift lever permits finger tip adjustment of speed from 2 to 12"/min in the lower position, and from 10 to 60"/min in the upper position.

Description: No. 20 Radiograph is a portable gas cutting-machine which is motor driven and track guided.



Equipped for single torch, straight line cutting operation

ed. Its controls are all conveniently located for easy operation and include: gear shift lever, indexed speed control, tachometer, forward-reverse switch, and clutch lever.

Machine alone weighs 57 lb while one section of track weighs 15 lb. Its dimensions are: overall length, 21½"; overall width, 10½"; height of carriage, 6"; and width of track, 8 1/16".

(Manufactured by Air Reduction, Dept. CP, 60 E. 42nd St., New York 17, N. Y. . . or for more information check CP 9516 on handy form, pages 2 and 3.)

Articles on H₂SO₄, acid and latex paints

Brief articles in 8-page, pocket-size bulletin cover sulfuric acid production and consumption, use of safety goggles, and role of lithopone in latex rubber paints. Illustrations accompany the easy-to-read text "Horsehead Bulletin, December 1951" is issued by The New Jersey Zinc Co., Dept. CP, 160 Front St., New York 38, N.Y. When inquiring specify CP 9517 on handy form, pages 2 and 3.

WIRE MESH

Maybe it all does look pretty much the same at first glance.

But when a firm has been making wire mesh for 70 years man and boy, there's bound to be a little more to it than meets the eye — a little more know-how in engineering and weaving, a little more quality in the product, a little more service and satisfaction for the user.

JELLIFF WIRE MESH is woven in all ductile metals

JELLIFF WIRE MESH is woven in all commercial weaves

JELLIFF WIRE MESH is woven in widths up to 72 inches

JELLIFF WIRE MESH is economical. Every foot runs true to the specifications.



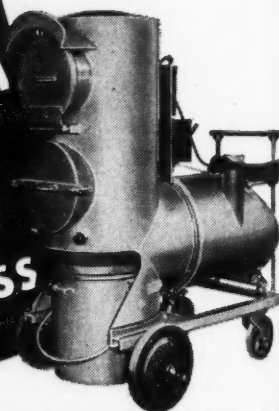
JELLIFF WIRE MESH is a quality product and has been for 70 years. You can depend on it.

Write today for full details about JELLIFF WIRE MESH, JELLIFF WIRE MESH PRODUCTS, and JELLIFF'S CONSULTATION SERVICE on wire-mesh engineering. Address Department 27.

THE C. O. JELLIFF MFG. CORP.
DIPPING BASKETS
LEKTROMESH
RESISTANCE WIRE
SOUTHPORT
WIRE PRODUCTS
WIRE MESH PARTS
WIRE CLOTH
STRAINERS • FILTERS
CONNECTICUT
SINCE 1880

When inquiring check CP 9518 on handy form, pgs. 2-3

**VACUUM
For Big
Business**



This Spencer Portable Vacuum Cleaner has 30 times the cleaning power of an ordinary home type machine. The dirt can hold 7½ cubic feet of rubbish—and is removed by a foot lever and rolled on casters to the point of disposal. It's built for big business and uses standard Spencer Vacuum tools.

This is the type used by plants having up to 500 acres of floor space to clean every night or tons of metal to pick up and reclaim or bulky raw products to convey. Portable sizes from 1½ to 15 HP. Stationary units to 100 HP. Ask for Bulletin No. 125-D.

THE SPENCER TURBINE COMPANY • HARTFORD 6, CONNECTICUT

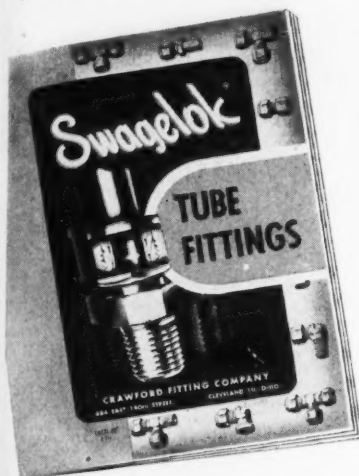
SPENCER
HARTFORD

439-D

When inquiring check CP 9519 on handy form, pgs. 2-3

CHEMICAL PROCESSING

**IT'S FREE
IT'S NEW!**



Swagelok^{*}

TUBE FITTINGS CATALOG

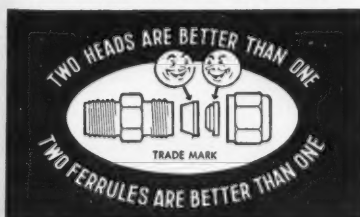
Every instrument man, process piping man, designer, engineer, and purchasing agent should have this new Swagelok Tube Fittings Catalog. It gives you at a glance, detailed, illustrated data on the complete line of Swagelok tube fittings in brass, aluminum, steel, stainless steel, and Monel. It's your complete guide to economical, torque-free, leakproof joints in all instrumentation and process piping lines.

FREE — Send for Swagelok Catalog B-151 today. Address Dept. 4

Patented

CRAWFORD FITTING CO.
884 E. 140th Street, Cleveland 10, Ohio

SWAGelok FITTINGS AVAILABLE IN: BRASS, ALUMINUM, STEEL, STAINLESS STEEL, MONEL



COME TO YOU COMPLETELY ASSEMBLED,
FINGER TIGHT

When inquiring check CP 9520
on handy form, pgs. 2-3

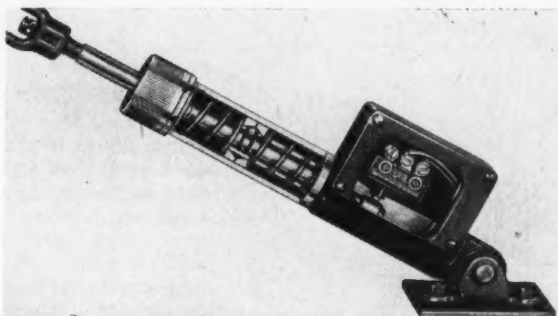
CONSTRUCTION & MAINTENANCE

**Protects driving or driven
equipment and reducer
from overload . . .**

replaces torque-arm regularly furnished with manufacturer's speed reducer

An overload release for the Dodge Torque-Arm Speed Reducer, which provides instant protection for driven machines, motors, and the speed reducer itself, has been developed by the Dodge Manufacturing Corporation.

Designed to prevent breakdowns, avoid expensive repairs, and insure against interruptions of production



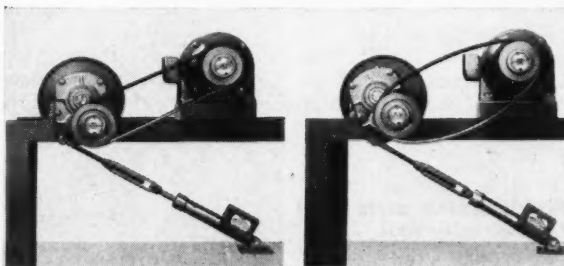
Overload release for speed reducer

resulting from any excessive load on the equipment, the Tri-Matic affords triple protection. Operating mechanically and electrically, it 1) loosens the belts, 2) cuts off the current, and 3) activates a warning bell, siren, or light.

Pressure exerted by an excessive load causes a piston to move lengthwise through the unit. This movement loosens the belts and cuts off the current simultaneously. The warning system is hooked up to the micro-switch.

This circuit can be used to control power or to activate alarms of various sorts.

Tri-Matic is calibrated for adjustment to the load conditions of any job. It can be set to act at any desired load up to the reducer's maximum capacity. To reset



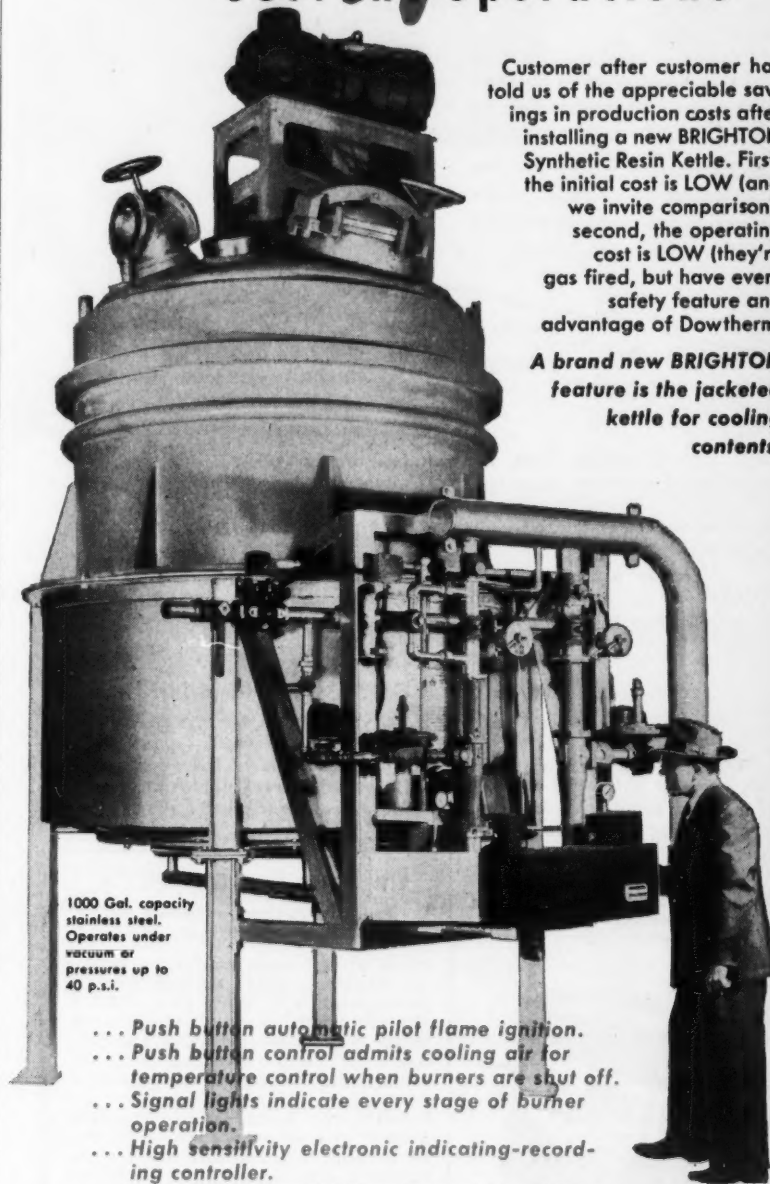
LEFT: Overload release is set, belts are tight, speed reducer is in operating position ready to go. RIGHT: Overload pressure has caused piston to plunge lengthwise through unit — loosening belts, cutting off power, setting off alarm

after it has been tripped, it is easy to pull the speed reducer back manually into position. This automatically cocks the overload release mechanism.

The unit replaces the standard torque-arm that is regularly furnished with maker's speed reducer — the two are interchangeable. Available in stock sizes, in either single or double reduction series.

(Development of the Dodge Manufacturing Corporation, Dept. CP, Mishawaka, Ind. . . or for more information check CP 9521 on handy form, pages 2 and 3.)

takes the **RED INK** out of
solvent operations



Customer after customer has told us of the appreciable savings in production costs after installing a new BRIGHTON Synthetic Resin Kettle. First, the initial cost is LOW (and we invite comparison); second, the operating cost is LOW (they're gas fired, but have every safety feature and advantage of Dowtherm.

A brand new BRIGHTON feature is the jacketed kettle for cooling contents.

1000 Gal. capacity
stainless steel.
Operates under
vacuum or
pressures up to
40 p.s.i.

- ... Push button automatic pilot flame ignition.
- ... Push button control admits cooling air for temperature control when burners are shut off.
- ... Signal lights indicate every stage of burner operation.
- ... High sensitivity electronic indicating-recording controller.
- ... Two speed or variable speed agitator drive as desired.

Write today for complete data.



BRIGHTON copper works inc.

820 state ave. • cincinnati 4 • ohio

DIVISIONS: F. C. DECKBACH SONS CO., HAMILTON COPPER & BRASS WORKS, BUCYRUS KETTLE WORKS
est. 1914* engineers* metalsmiths* machinists* designers, producers of chemical processing equipment

When inquiring check CP 9522 on handy form, pgs. 2-3

PROBLEM:

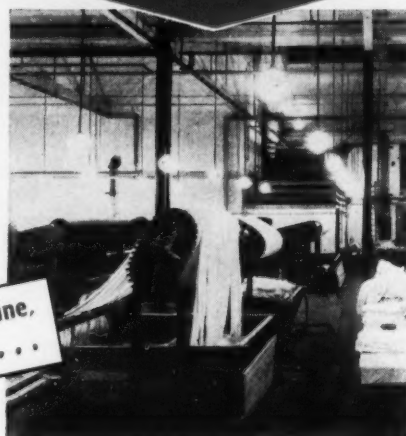
A well-known process plant wanted to protect masonry, structural steel and equipment from corrosion caused by continuous moisture, chlorine, acetic acid, peroxides and other paint-destroying chemical agents.

SOLUTION:

Standardization upon Prufcoat Protective Coatings (in desired color scheme, including white on ceiling and wall areas) has put a stop to costly corrosion and radically reduced painting maintenance expenditures.

Continuous Moisture, Chlorine,
Acetic Acid and Peroxides . . .

Where Acids or
Alkalies Destroy
Prufcoat PROTECTS



"Prufcoat has been the standard in our plant for all corrosion areas for some six years now," the superintendent of this plant recently reported . . . "Although we have continuously checked Prufcoat with other materials offered to us, we have not found anything to compare favorably with it."

Yes, in plant after plant, wherever conditions are really tough, Prufcoat is stopping profit-eating corrosion and cutting painting maintenance costs . . . on concrete walls, ceilings, structural steel, pipes, tanks, ducts, machinery and equipment.

**Coat for Coat, Prufcoat Gives More Protection
at Lower Cost Than Any Other Air-drying Paint**

Get complete facts on performance-proved Prufcoat before scheduling your next paint job. Or better still, let a Prufcoat corrosion engineer make a preventive maintenance survey of your plant. Write today, describing YOUR corrosion problems.

Send for new Prufcoat
Catalog describing all
Prufcoat products



NEW! Prufcoat Heavy-Duty Primer P-50

Provides Positive Adhesion and
Eliminates Underfilm Corrosion

Here at last is a fool-proof primer — requires only normal surface preparation and dries overnight — for the practical conditions encountered in process plants. Its highly inhibitive and positive adhesion characteristics provide the answer to controlling under-film corrosion and bonding top coats — either plastic base or conventional paint — securely to both ferrous and non-ferrous surfaces. Ask for Prufcoat Technical Bulletin 015.

PRUF-COAT LABORATORIES, INC.
50 East 42nd Street, New York 17, N. Y.

Preventive Maintenance PAYS

When inquiring check CP 9523 on handy form, pgs. 2-3

CONSTRUCTION & MAINTENANCE

Simplified design of seal employs liquid pressure for balance . . .

liquid to be sealed builds up behind "floating" member and forces it to seal tightly

Uses: Seals of this type are currently being used on washing machines, water, oil and fuel pumps, hydraulic

transmissions, generators, gas blowers, and other equipment.

Features: Positive seal is accomplished when liquid pressure forces graphite or bronze member to clamp down tightly.

Description: Simple design of the Mechanical Shaft Seal calls for fewer parts and requires less space than conventional models. Design can be worked out for high temperature, pressure, or rotational speed. Typical figures show good performance at 425°F and 35 psi with a speed of 35,000 rpm. Materials are selected to resist corrosion from the liquid encountered.

(A product of Cartriseal Corporation, Dept. CP, 1450 W. Randolph St., Chicago 7, Ill. . . or for more information check CP 9524 on handy form, pages 2 and 3.)

Details 8 different types of protective coatings

Briefly described in eight-page bulletin are protective coatings based on various synthetic resins. Products mentioned here offer protection against acids, alkalis, water, oils, solvents, high temperatures, abrasion, etc., and can be applied to metal, wood, and masonry. In addition to the eight coatings detailed, information is given on an all-metal primer. "DEL Protective Coatings" is issued by David E. Long Corp., Dept. CP, 220 East 42nd St., New York 17, N.Y. When inquiring specify CP 9525 on handy form, pages 2 and 3.

Molds plastic parts to high density and uniformity . . .

high-speed, hydraulic, transfer molding press uses top- or bottom-ejection molds

Uses: Transfer molding of plastics. Can be employed as either a one-press installation or as an addition to an existing line.

Features: Molded parts are said to be of high density and uniformity; pieces with projections and small pins are easily produced. Both top- and bottom-ejection molds can be accommodated. Three-speed controlled closing reduces closing time step-wise, preventing mold damage.

Description: Model 727, a high-speed hydraulic type, is available with either top or bottom plunger to suit user's requirements. Double pumps are supplied, and since each cylinder has its own pump and controls, pressure and speed



Every
Article in
**CHEMICAL
PROCESSING**
is
"Staff Written"

Every article in **CHEMICAL PROCESSING** is terse, brief, to-the-point . . . yet packed with essential facts of developments important to every man in chemical processing.

For every article is "Staff Written." Our Editors dig out the vital news-facts, then write them in the fewest possible words. That's why you read so much . . . keep up with developments . . . in short reading time. You don't have to "wade through" long, hard-to-read articles.

That's why you don't find these articles signed . . . every one is "Staff Written." It's the most difficult kind of editing, but it pays big dividends to every busy reader.



Positive PLUG VALVE LUBRICATION Automatically!

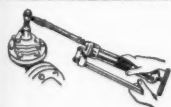
EVERY
TIME...



... they're
OPENED
and
CLOSED

with the DELTA AUTOMATIC Plug Valve LUBRICATOR

This simple, low priced device is the mechanical brain that **always** remembers to lubricate your valves. It is the answer to a long felt need. Like the Delta Gun, Delta Fittings, and Delta-Desco Lubricants — it is another **first** developed by the Delta Plug Valve Lubricating Specialists. Write for Lubricator Catalog 15-0.



With the DELTA
High Pressure GUN
and DESCO
Specialized Lubri-
cants and Fittings

you can lubricate 10 to 15 valves in the same time usually required to service one with conventional jack screw.

The Only Complete
Plug Valve
Lubrication
Company

DELTA
ENGINEERING SALES CO.

P. O. Box 678 Phone 5-2416
SHREVEPORT, LOUISIANA, U. S. A.
Sales Offices in All Principal Cities

When inquiring check CP 9526
on handy form, pgs. 2-3

CONSTRUCTION & MAINTENANCE

of each can be adjusted separately. Press has extra-long transfer stroke to provide ample clearance for loading.

Molding cycle is controlled by manufacturer's bar type controller which provides automatic cycle control through simple movement of buttons on graduated bars. Controller can be reset while press is operating. Initial ram approach is at high speed, intermediate approach is slower, and final closing is only as fast as material plasticizes. Double-acting ram replaces external pull-back cylinders.

Optional equipment include hot plates for either steam or electric heating, components for automatic steam heating or water cooling of molds, and adjustable head with or without longer tie-rods.

(Product of F. J. Stokes Machine Company, Dept. CP, 5500 Tabor Rd., Philadelphia 20, Pa. . . . or for more information check CP 9527 on handy form, pages 2 & 3.)

**2500°F doesn't phase
paint with excellent
refractory values . . .**

dries fast to firm coat with good adhesion qualities

Uses: For coating surfaces that reach temperatures as high as 2500°F. Will retard but not prevent scaling of metals prone to scale.

Features: Dries quickly to a firm coat with good adhering qualities. Refractory properties are reported to be excellent.

Description: Pyromark® is applied like ordinary paint by brushing or spraying. Adhesion is greatly improved if surfaces are first sandblasted. This is especially important where considerable vibration, high velocity gas streams, or high angular velocities are encountered.

After coating a surface, one hour drying should be allowed before heating. When the coating is heated for the first time, ten to fifteen minutes should be allowed for a temperature rise between 300 and 1000°F to permit gradual vitrification. Subsequent heating requires no such precaution.

Two or three coats (0.001 inch) can be applied, vitrifying each. Small amounts of turpentine can be used for thinning. Pyromark® is available in green, maroon, blue, white, black, or gray.

(Product of the Tempil® Corporation, Dept. CP, 132 West 22nd St., New York 11, N. Y. . . . or for more information check CP 9528 on handy form, pages 2 and 3.)

**Colorful wall chart tabulates
info on welding rods**

Measuring 21¼ x 30", three-color wall chart lists all of manufacturer's bronze welding rods and wire products by trade name, together with AWS and ASTM designation.

Opposite the trade names and presented in the form of a table are descriptive information, typical applications, mechanical properties and chemical composition, recommended current and polarity, NEMA color markings, and diameter sizes.

Also included is a table of preheat temperatures for copper, copper-base, iron-base and dissimilar metals. Chart is bordered with numerous application pictures with a brief description of each specific job. "Bronze Welding Electrode" wall chart is issued by Ampco Metal, Inc., Dept. CP, 1745 South 38th St., Milwaukee 46, Wis. When inquiring specify CP 9529 on handy form, pages 2 and 3.

from solder manufacturing



to shortening!

wide-awake process men value

DOWTHERM

the MODERN heat transfer medium

DOWTHERM® is efficient! DOWTHERM, with a high coefficient of heat transfer, speeds heating and minimizes equipment size.

DOWTHERM provides flexibility within the operating range. Heat supply to several units at different temperatures is possible, if desired. It also provides a high uniformity of heat control, preventing hot spots and local overheating of your product.

If your operations require precise heating in the 300-750° F. range, write to Dow for complete information about DOWTHERM.

THE DOW CHEMICAL COMPANY
MIDLAND, MICHIGAN



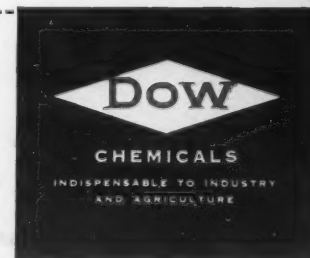
THE DOW CHEMICAL COMPANY
DEPT. DO-29
MIDLAND, MICHIGAN

Name _____ Title _____

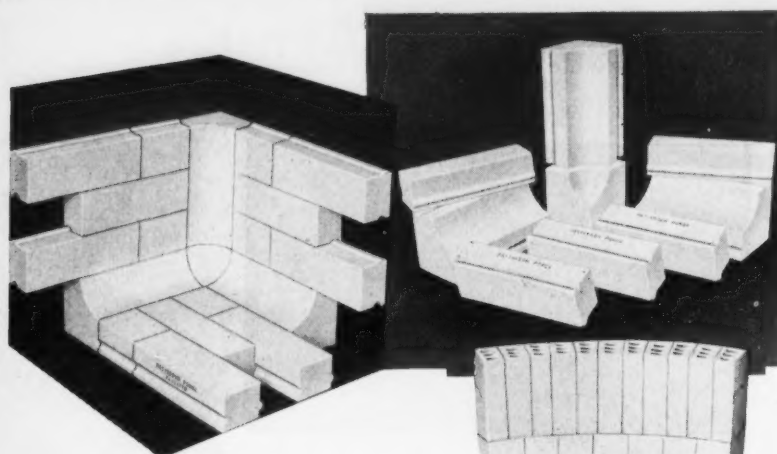
Company _____

Address _____

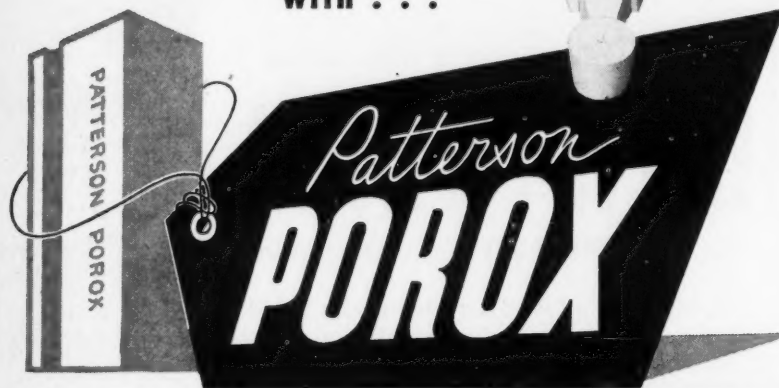
City _____ State _____



When inquiring check 9530 on handy form, pgs. 2-3



You get
COMPLETE VERSATILITY
in Acid-Proof Tank Linings
with . . .



Pure-white Patterson Porox Lining Blocks have dependable acid-proof durability in service—you can count on that — combined with versatility in shapes for easy application to tanks of every style. Make the chemical industry's choice *your* choice—specify POROX for that new tank lining today!

Richard L. Canaway
President

The IDEAL LINING for
MIXER TANKS
KETTLES
AUTOCLAVES
SULPHONATORS
NITRATORS
CRYSTALLIZERS
DRYERS
EVAPORATORS
ACID STORAGE
TANKS
PICKLING TANKS

and other vessels

The Patterson Foundry and Machine Company

East Liverpool, Ohio, U. S. A.

NEW YORK, BOSTON, BALTIMORE, PHILADELPHIA, PITTSBURGH, DETROIT, CINCINNATI,
CHICAGO, ST. LOUIS, HOUSTON, DENVER, LOS ANGELES, SAN FRANCISCO, SEATTLE

The Patterson Foundry and Machine Company, (Canada) Limited
Toronto, Canada
MONTREAL

When inquiring check CP 9531 on handy form, pgs. 2-3

CONSTRUCTION

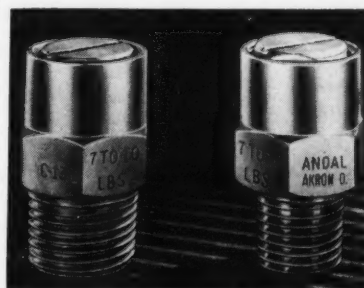
Prevents build-up of pressure in tank . . .

low-pressure relief valve can be set for pressures of 7 to 10 psi

Uses: Low pressure relief valve. Especially useful where unwanted pressure could build up as in storage systems, tanks, shipping containers.

Features: Can be set with a screw-driver for pressures from 7 to 10 psi.

Description: Sturdy corrosion-resistant parts are used to arrive at the compact design of this valve. Although



Shows slotted pressure adjustment at top

special lengths can be furnished on order, standard size is 1-15/16 x 3/4" overall diam. Valve is threaded for 1/4 or 3/8" pipe fitting. Again, special threading is available.

Furnished in brass, steel or stainless, it has been constructed to withstand weathering and has demonstrated this ability in standard salt-spray tests.

Valve is designated as Type C-13.

(Produced by Andrews-Alderfer Company, Dept. CP, 1043 Home Ave., Akron 10, Ohio . . . or for more information check CP 9532 on handy form, pages 2 and 3.)

Of main interest to pipe tool users

Pipe and bolt machines are the topic of manufacturer's 1952 edition of products catalog. Pertinent information is given on three models of the aforementioned machines, ratchet threaders, reamers, cutters, and other pipe tools in the hand and power classification.

Four pages in the back of the catalog are devoted to an "Operating Guide" which instructs in obtaining the best results from pipe and bolt machines, and hand tools. "1952 Catalog and Data Book" is issued by Beaver Pipe Tools, Inc., Dept. CP, Dana Ave., Warren, Ohio. When inquiring specify CP 9533 on handy form, pages 2 and 3.

Announcing

THE GREAT NEW

RIGID 500

PIPE & BOLT THREADING MACHINE



Built like a
fine machine tool

Full of typical RIGID improvements

- Range 1/8" to 2" pipe; 1/4" to 2" bolts.
- Cutting, threading and reaming tools operate independently and right up to chuck, swing up out of way when not in use.
- New RIGID quick-opening quadritype, dualtype and monotype die heads save time and work.
- Concealed oil system, reversible pump, no priming.
- More than 20 other efficiency improvements—see this remarkable new RIGID "500" at your Supply House!

THE RIDGE TOOL CO. • ELYRIA, OHIO



When inquiring check CP 9534 on handy form, pgs. 2-3

CHEMICAL PROCESSING

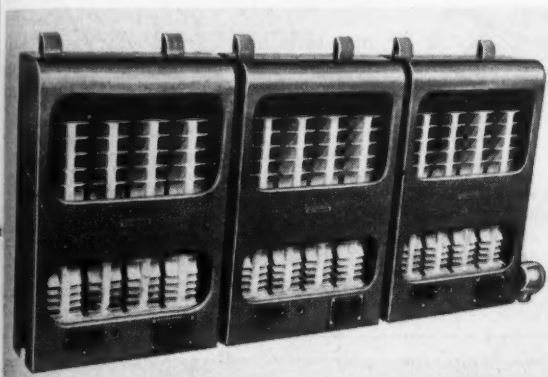
Explosion hazard eliminated with UL-approved electric unit heaters . . .

have found use in pump, meter and valve houses, and in personnel warming shelters

Uses: Heater for atmospheres containing gasoline, petroleum, naphtha, acetone, benzol, lacquer, solvent vapors and natural gas. Has found wide application in pump, valve and meter houses, and in personnel warming shelters.

Features: Reported to be the only explosion-proof electric unit heater of its kind approved by Underwriters' Laboratories for use in Class 1 Group D locations. Eliminates worry about heating liquids freezing up or running dry. Heater will not rust or corrode.

Description: Convection type explosion-proof heaters are made in three models with ratings of 2000, 4000 and 6000 watts. All use a special heating element consisting



Explosion-proof electrical unit heaters

of a nickel-chromium resistor wire, insulated and sheathed in a seamless metal tubing which is embedded in a one-piece finned aluminum tubing. This completely seals the element, eliminating fire, shock and burn hazards.

Aluminum grid remains at low operating temperature, but has high thermal conductivity; said to be 100% efficient.

(Products of Electromode Corporation, Dept. CP, 45 Crouch St., Rochester 3, N. Y. . . or for more information check CP 9535 on handy form, pages 2 and 3.)

Bonded block method in cars facilitates loading

Commodities in cans or glass in fibreboard containers can be tightly and securely loaded into railroad cars by use of the "bonded block" methods described in this 16-page bulletin. Publisher recommends this technique to assure safe freight shipment.

Each page carries one or more diagrams for loading various sizes of cans or cartons into refrigerator or box cars of different dimensions. Method is the result of many test shipments to overcome shifting or "saw-toothing" of cartoned or canned commodities during railroad transit. In the "bonded block" method, containers are packed like headers or stretchers in a brick wall, thereby breaking up cleavage lines both vertically and laterally and forming a bond.

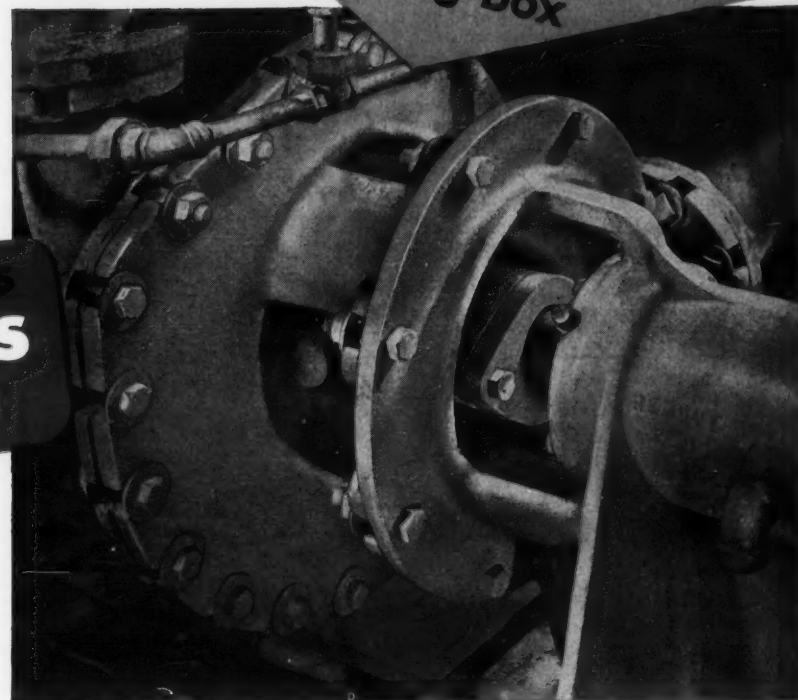
General Information Series No. 515 is issued by Secretary Freight Loading and Container Section, Association of American Railroads, Dept. CP, 59 E. Van Buren St., Chicago 5, Ill.

FEBRUARY, 1952

Stop PUMP LEAKAGE

Go from this to this with EQUISEAL Stuffing Box

ALLIS-CHALMERS
PROCESS PUMPS



YOU CAN STOP LEAKAGE entirely on suction heads up to fifteen feet with the Allis-Chalmers Process Pump equipped with *Equiseal* stuffing box. This new stuffing box is so effective that the packing may actually be removed while the pump is in operation and no leakage will occur even though there is direct passage from the liquid being pumped to atmosphere. Where suction head is more than fifteen feet, pressure on the packing is reduced by this amount and leakage is greatly reduced.

HOW IT WORKS

An auxiliary impeller develops a low pressure area in front of the packing. The liquid being pumped is thrown away from the stuffing box and back into the main stream. As a result, pressure on the packing is zero up to fifteen

feet of suction head and the liquid being pumped does not even enter the stuffing box.

So if you must stop leakage because of sanitation, corrosion, abrasion or for any other reason, call your nearby Allis-Chalmers Authorized Dealer or District Office for application engineering help on your job. Or write Allis-Chalmers, Milwaukee 1, Wisconsin and ask for Bulletin 08B6615.

A-3475

Equiseal, Vari-Pitch and Texrope are Allis-Chalmers trademarks.

ALLIS-CHALMERS



Sold . . Applied . . Serviced . .

by Allis-Chalmers Authorized Dealers, Certified Service Shops and Sales Offices throughout the country.



MOTORS — 1/2 to 25,000 hp and up. All types.

CONTROL — Manual, magnetic and combination starters; push button stations and components for complete control systems.



TEXROPE — Belts in all sizes and sections, standard and Vari-Pitch sheaves, speed changers.

When inquiring check CP 9536 on handy form, pgs. 2-3



Type "AW" automatic priming pump handling naphtha.

Split Bearing Stand Cuts Maintenance Cost of NAGLE PUMPS

Just unscrew (or cut off with a torch if necessary) four nuts on each side and the top half of the bearing stand lifts off exposing the bearings. Merely loosen one nut on each side to release tubular supports, for slippage seal adjustment. Instant "thumb & forefinger" packing gland adjustment. Impellers, plates or casings changed in a jiffy. These and other features cut maintenance costs to the bone. That is why Nagle Pumps are preferred for the really tough pumping jobs. Also vertical shaft pumps for pumping abrasive or corrosive materials.

Nagle Pumps, Inc.
INDUSTRIAL PUMPS FOR ABUSIVE APPLICATION
1247 Center Ave. Chicago Heights, Ill.

When inquiring check CP 9537 on handy form, pgs. 2-3

THE "DAVENPORT" CONTINUOUS PRESS

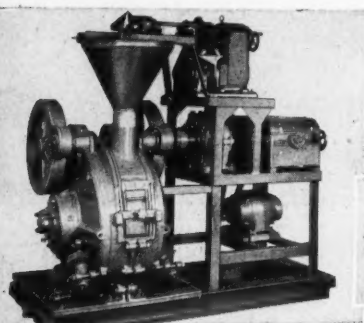
DAVENPORT

De-Watering Presses and Screens

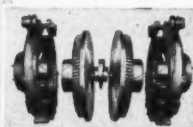
ROTARY

Steam Tube Hot Air and Direct Fire Dryers.

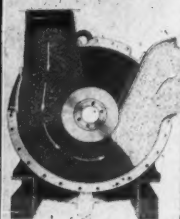
Water Tube and Air Coolers.



Assembled Press.



Revolving Discs.



Cross Section.

DAVENPORT MACHINE and FOUNDRY COMPANY
DAVENPORT 4 IOWA

The Davenport Continuous Presses are made in three sizes. Davenport Presses are the most efficient mechanical method of extracting excessive moisture from semi-solids. If you have a moisture problem, let Davenport engineers assist you. Write for our complete catalog.

For quick reference see "Sweet's 1952 Processing Industries" file.

When inquiring check CP 9538 on handy form, pgs. 2-3

CONSTRUCTION

Increases flux activity without the use of mineral acids . . .

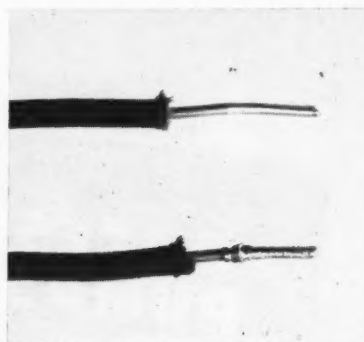
solder is buffered to reduce corrosion; gives off no toxic fumes

Uses: Particularly indicated for those jobs that formerly required strong liquid fluxes. Metals such as phosphor bronze, nichrome may be soldered as readily as tinned steel, galvanized iron, copper, brass, etc.

Features: Gives off no toxic fumes and is safe to use under any conditions; buffered to reduce corrosion.

Description: Fargail Soldering Cream embodies certain ingredients which increase the activity of the flux without the use of mineral acids and, at the same time, it protects soldered metal from corrosive attack by the active substances.

It is stated that Fargail Cream is also



Effective use of soldering paste demonstrated in top view

highly effective when used for sweating copper fittings as its scavenging action is so pronounced that solder becomes very fluid—making for better and tighter joints. It is available in 1/2 lb cans.

(Announced by Farrelloy Corp., Dept. CP, 1260 N. 26th St., Philadelphia 21, Pa. . . or for more information check CP 9539 on handy form, pages 2 and 3.)

Compact pump for most light fluids has rolling vanes . . .

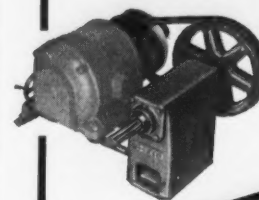
capacity: 1 1/2 down to 1/4 gpm or less; rated speed, 1750 rpm

Uses: Suitable for handling fuel oil, gasoline, hydraulic fluid, lubricating oils and other low-viscosity fluids.

Features: Replacement of vanes by rollers is stated to increase life of pump 3 to 5 times over that of conventional type vane pumps. With this design, the rollers contact the outer case as in

(Continued on page 196)

LOW-COST



FINGERTIP SPEED CONTROL

with

LOVEJOY variable SPEED PULLEYS

Speed up or slow down equipment while machines are running — make material or production changes without losing time and labor. Easily installed on old or new machines. Sizes fractional to 8 H.P. Ratios to 3:1 infinitely variable. Also investigate the new Lovejoy Tilting Motor Base. Adjustable width and length to accommodate all fractional motors up to 3/4 H.P. Low price.

Send for catalog and complete data.

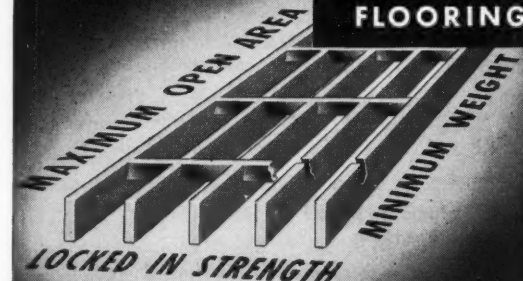
LOVEJOY FLEXIBLE COUPLING CO.

5072 W. Lake Street,
Also Mfrs. Lovejoy Universal Joints and Lovejoy Flexible Couplings

Chicago 44, Illinois

When inquiring check CP 9540 on handy form, pgs. 2-3

this is - TRI-LOK OPEN STEEL FLOORING



LOCKED IN STRENGTH of Tri-Lok open steel flooring gives efficient load distribution, even on long spans. Get maximum strength, light, and air with minimum weight. Available in Rectangular, Diagonal, and Super-Safety U-type Flooring, and Stair Treads of all kinds.

The Tri-Lok Company is also equipped to furnish riveted and Tri-Forge welded open steel flooring. Tri-Lok gratings can be furnished in a variety of metals, including aluminum alloy, stainless steel, etc. Write for Bulletin MT1140.

DRAVO CORPORATION

National Distributor for the Tri-Lok Company
Dravo Building, Pittsburgh 22, Pennsylvania
Sales Representatives in Principal Cities



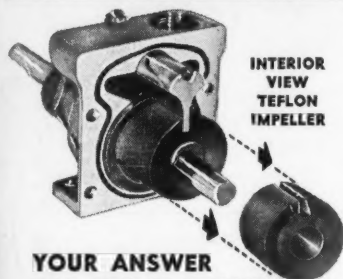
When inquiring check CP 9541 on handy form, pgs. 2-3

CHEMICAL PROCESSING

LOOKING
FOR A SMALL
CHEMICAL PROCESS
PUMP TO HANDLE
NITRIC, CHROMIC &
OTHER OXIDIZING
AND HAZARDOUS
CHEMICALS?

SAFE, SELF-PRIMING

ECO
AllChem
TEFLON
STAINLESS STEEL PUMPS



INTERIOR
VIEW
TEFLON
IMPELLER

**YOUR ANSWER
FOR APPLICATIONS
TO 70 PSI FOR
PRODUCTION, PILOT
PLANTS & LABORATORIES**

- Conveys virtually all fluid chemicals in widest viscosity ranges.
- DuPont Teflon Impellers will not shrink, crack, swell or harden in use — not subject to shelf deterioration.
- Capacities 1 to 10 G.P.M.
- **Priced Amazingly Low**
- **EARLY DELIVERIES**

For prompt and specific recommendations, please advise operational requirements and motor characteristics desired.

ECO ENGINEERING CO.
12 NEW YORK AVE. NEWARK 1, N. J.
MANUFACTURERS OF
SMALL PROCESS PUMPS

When inquiring check CP 9542
on handy form, pgs. 2-3

CONSTRUCTION & MAINTENANCE

Describes construction of a corrosion-resistant floor

Particularly directed to construction men and engineers who are faced with corrosion-resistant flooring problems, this 15-page bulletin includes many helpful drawings and illustrations. The aforementioned problem is discussed in terms of four material elements: the sub floor, the membrane, the acid brick, and the jointing compound.

Properties of manufacturer's materials of construction in providing corrosion protection are detailed, and a short "question-and-answer" section is included. Bul AB-17 is issued by The U.S. Stoneware Co., Dept. CP, Akron 9, Ohio. When inquiring specify CP 9543 on handy form, pages 2 and 3.

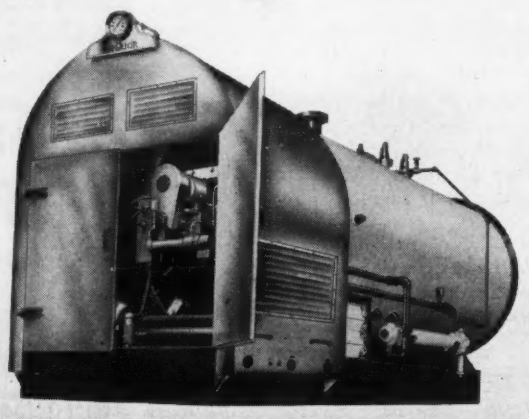
Houses boilers outdoors while construction is completed . . .

"dog house" protects boiler, leaves working parts accessible, and offers safety features

Uses: For protection of boilers operating outdoors while boiler room is under construction or renovation.

Features: While affording protection, the structure does not hinder boiler's use.

Description: "Dog House" was evolved when many of manufacturer's boilers were temporarily installed out-of-doors while boiler rooms were renovated or repaired.



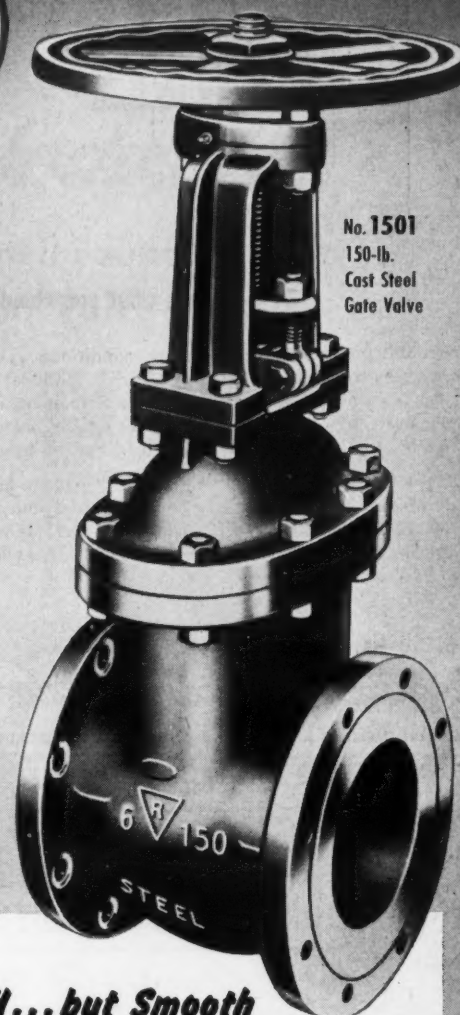
"Dog House" door open, showing controls

While protecting the boiler from the elements, the housing does not impair its normal use. Several important safety features make it impossible to operate the boiler with the doors closed while the engineer is in the enclosure.

(Designed and built by Superior Combustion Industries, Inc., Dept. CP, 1475 Broadway, New York, N. Y. . . or for more information check CP 9544 on handy form, pages 2 and 3.)

Report on various aspects of non-fusion welding

Eight-page reprint of a technical paper, "Dilution and Diffusion Aspects of Non-Fusion Welding," is profusely illustrated and documented with charts, diagrams, tables, and derivations of formulas. Reprint is issued by Dept. P, Eutectic Welding Alloys Corp., Dept. CP, 172nd St. and Northern Blvd., Flushing, N. Y. When inquiring specify CP 9545 on handy form, pages 2 and 3.



No. 1501
150-lb.
Cast Steel
Gate Valve

TOUGH...but Smooth

• Electric furnace steel is used in the manufacture of R-P&C Cast Steel Valves. With all parts of equal strength, they are tough. Bodies resist distortion. One-piece yoke is rigid, provides permanent alignment. Gland packing stays tight at high pressures and temperatures. Requires little servicing. Internal design permits smooth flow and positive shut-off.

You'll save money with R-P&C Cast Steel Gate Valves. See your R-P&C distributor or write the nearest R-P&C district office for information.

ACCO



R-P&C VALVE DIVISION
AMERICAN CHAIN & CABLE

Reading, Pa., Atlanta, Baltimore, Boston, Chicago,
Denver, Detroit, Houston, New York, Philadelphia,
Pittsburgh, San Francisco, Bridgeport, Conn.

**R-P&C
valves**

When inquiring check CP 9546 on handy form, pgs. 2-3

HANDLING CORROSIVES?



Here's what you should know about LEAD

Dependable under extremely corrosive conditions . . . under many pressures, concentrations and temperatures . . . lead is the ideal material for handling sulphuric, sulphurous and chromic acids. In the chemical, textile, petroleum and metallurgical industries . . . wherever reliable control of strongly corrosive harsh-acting materials is imperative, lead can be used safely.

For complete technical assistance with your corrosive-handling problem, write to Federated's Corrosion Advisory Service. It is at your service. For lead products, use ASARCO Brand lead pipe, lead sheet, and lead fittings. Available in all standard sizes and forms through Federated's 22 sales offices across the country.

Federated Metals Division

AMERICAN SMELTING AND REFINING COMPANY • 120 BROADWAY, NEW YORK 5, N. Y.

When inquiring check CP 9547 on handy form, pgs. 2-3



It's UNEXCELLED FOR DEPENDABLE DEHYDRATION!

The Quality Pritchard HYDRYER*

The Quality Pritchard HYDRYER* is unexcelled for dependable dehydration of air and other gases for instrument and process controls. Dual adsorbents provide continuous drying action. HYDRYER* is standard, packaged unit designed to reduce dew points to minus (-) 40°F. Only service connections are required. Specially designed HYDRYER* units can be tailored to meet your individual requirements.

*Registered Trade Name



WRITE TODAY FOR BULLETIN NO. 16.0.080

J.F. Pritchard & Co.
EQUIPMENT DIVISION

Dept. No. 179 908 Grand Ave., Kansas City 6, Mo.



Cooling Towers
Gas & Air Treating
Specialized Heat Exchangers

District Offices: CHICAGO • HOUSTON • NEW YORK • PITTSBURGH
TULSA • ST. LOUIS • Representatives in Principal Cities from Coast to Coast

When inquiring check CP 9548 on handy form, pgs. 2-3

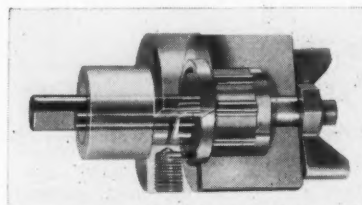
CONSTRUCTION

(Continued from page 194)

a roller bearing, and rolling friction replaces sliding friction.

Description: A positive displacement pump, the "Magna-Mite" has a capacity from 1½ down to ¼ gpm or less. It is compact in size—6" long with a 2¾" diameter—and is rated at 1750 rpm.

Three major types are available: constant displacement (Type A), adjustable displacement (Type B), and variable and reversible displacement



Type B—an adjustable displacement pump—has thumb lever mounted at back end

(Type C). All three types will operate in either direction of pump rotation and in any position. Accompanying photo shows a Type B pump on which the discharge volume is easily adjusted by turning a thumb lever mounted at the back end.

(Manufactured by Milwaukee Hydro-power, Inc., Dept. CP, 3447 N. 35th St., Milwaukee 16, Wis. . . or for more information check CP 9549 on handy form, pages 2 and 3.)

**Will set up overnight
to give floors that
are fireproof . . .**

steel-wheeled trucks up to 2 tons may use after 48 hr

Uses: Flooring material.

Features: Fireproof; oil, grease, solvent resistant; easy to apply.

Description: Saf-T-Flor can be troweled as a mortar mix over any solid wood or concrete floor, and it will harden to form a dense, stone-like surface. Under normal drying conditions, Saf-T-Flor sets up hard enough overnight for foot traffic. After 48 hr, steel-wheeled truck loads up to 4000 lb may travel over it.

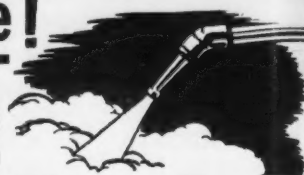
Particularly adaptable for plant reconstruction work, the resurfacer is available in light gray (natural), tile red, russet brown and green.

(Saf-T-Flor is a product of The Monroe Co., Inc., Dept. CP, 10703 Quebec Ave., Cleveland 6, Ohio . . . or for more information check CP 9550 on handy form, pages 2 and 3.)

You'll Agree!

This Oakite

Steam Gun Cleans Best



FOR doing every kind of cleaning or related job from reconditioning heavy equipment to stripping paint, the Oakite Steam-Detergent Gun can't be beat for doing the work thoroughly, quickly, economically.

By applying a hot, powerful cleaning solution under pressure, gun quickly removes tenacious dirt and grime deposits especially from hard-to-get-at places. FREE booklet gives details. Write for your copy TODAY. Oakite Products, Inc., 18F Thames St., N. Y. 6, N. Y.

SPECIALIZED INDUSTRIAL CLEANING
OAKITE
MATERIALS • METHODS • SERVICE

Technical Service Representatives in Principal Cities of U. S. & Canada

When inquiring check CP 9551 on handy form, pgs. 2-3

This Revolutionary NEW GRIP-STRUT GRATING

gives MAXIMUM STRENGTH
with MINIMUM WEIGHT

**RUGGED
LOW COST
NON-SKID
VERSATILE**



A Globe patent feature
(Patents Pending)

Not welded. Vertical members joined by integral saddles—side channel members and grating are a single unit—combines great strength with light weight. Simplifies installation—greatly reduces costs of construction. Easily replaces old or obsolete types of grating. Feature for feature, Grip Strut has a lower initial cost factor than any other type. Available in steel or aluminum.

WRITE FOR FULL DETAILS



The GLOBE Company
MANUFACTURERS SINCE 1914
4006 S. PRINCETON • CHICAGO 9, ILL.

When inquiring check CP 9552 on handy form, pgs. 2-3

CHEMICAL PROCESSING

**Ups worker comfort, production
by eliminating cold spots . . .**

small electric heaters of three wattages bolt into place where they are needed

Mobile and semi-permanent electric radiant heaters can improve worker comfort, and consequently morale and production. These heaters are easily installed or built up from basic electrical units. Three of these units are available. One 800 w unit is 24 1/2" long, an 1100 w



Photo shows heater installed on punch press. It can be seen in lower right center

heater is 30 3/4" long, and the 1800 w unit measures 46 3/4". Non-glare heating elements are encased in a metal reflector which may include protective grills if desired. Input controls are also optional equipment.

Units are equipped with a six-inch BX lead and plug, and bolt in place with two movable clamps and bolts. In many cases they are just laid on the floor to warm worker's legs. Rugged design (resistance element is completely sheathed) allows them to be used out-of-doors as well as in buildings. They are recommended for shipping and receiving work on platforms or in boxcars.

(Product of E. L. Wiegand Co., Dept. CP, 7517 Thomas Blvd., Pittsburgh 8, Pa. . . or for more information check CP 9553 on handy form, pages 2 and 3.)

**Data on combination fixed and
variable speed drives**

Two-page sheet tells of miniature combination fixed and variable speed drive units for use in low power applications requiring variable speed at reduced normal output speed. Publication states that by elimination or modification of several component parts of manufacturer's variable and fixed ratio speed changers, combinations offer an appreciable saving in length and improved efficiency, in completely sealed, packaged units.

Line drawings show dimensions of unit and descriptive material gives instructions on application. Technical Data Sheet M1 is issued by Metron Instrument Co., Dept. CP, 432 Lincoln St., Denver 9, Colo. When inquiring specify CP 9554 on handy form, pages 2 and 3.

FEBRUARY, 1952

PUTTING IT ON THE LINE...

in Industry after Industry!

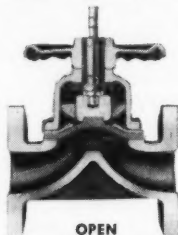
The Grinnell-Saunders Diaphragm Valve

Here's why . . . Piping in today's complex industrial plants is an exacting science involving the handling of highly corrosive fluids, gases, compressed air, beverages, foods and suspended solids . . . in lines where corrosion, abrasion, contamination, clogging, leakage and maintenance are costly factors. Under such conditions, the amazing adaptability of the Grinnell-Saunders Diaphragm Valve explains its acceptance by industry after industry.

Bodies of this versatile valve are made in a variety of metals — iron, stainless steel, bronze, aluminum and others. *But of more importance* is the fact that a body of cast iron (a metal not in short supply) can be lined with glass, lead, natural rubber, neoprene and other materials which, in many instances, handle corrosive fluids *better* than metals.

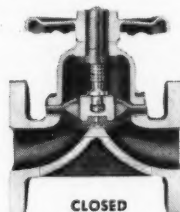
Diaphragms come in natural rubber, neoprene, butyl, hycar, a special synthetic for foods, and KEL-F. This last is chemically inert to all acids and alkalis in all concentrations with the exception of molten alkali metals.

From this broad selection of materials, the problems which the Grinnell-Saunders valve can solve are extremely varied. No wonder industry after industry is putting it on the line.



OPEN

Showing rising spindle . . . valves are available with rising or stationary spindle.



CLOSED

KEL-F diaphragm, using special rubber backing cushion and floating tube nut design.

CHECK THESE GRINNELL-SAUNDERS FEATURES...

- Diaphragm absolutely isolates working parts from the fluid.
- Diaphragm lifts high for streamline flow in either direction.
- Diaphragm presses tight for positive closure.
- Body, lining and diaphragm materials to suit service.
- Simple maintenance — diaphragm easily replaced.

GRINNELL

WHENEVER PIPING IS INVOLVED

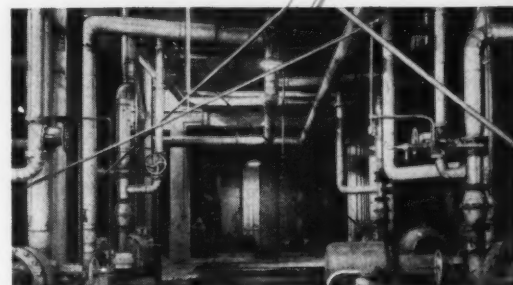


Grinnell Company Inc., Providence, Rhode Island

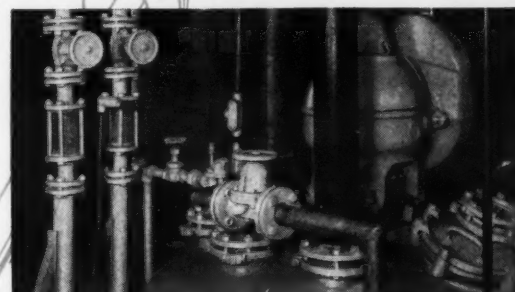
Sales Offices and Warehouses in Principal Cities

pipe and tube fittings • welding fittings • engineered pipe hangers and supports • Thermolier unit heaters • valves
Grinnell-Saunders diaphragm valves • pipe • prefabricated piping • plumbing and heating specialties • water works supplies
industrial supplies • Grinnell automatic sprinkler fire protection systems • Amco air conditioning systems

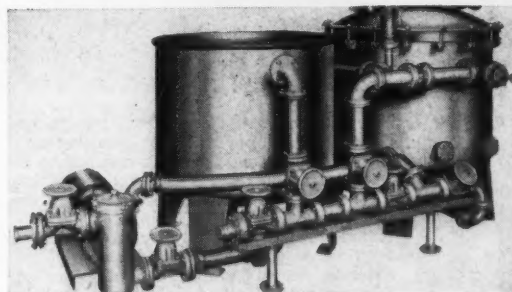
When inquiring check CP 9555 on handy form, pgs. 2-3



PULP AND PAPER MILL. Rubber-lined Grinnell-Saunders Valves on stainless steel piping handle sulphate pulp stock in bleach plant of Potlatch Forests, Inc., Lewiston, Idaho.



CHEMICAL PLANTS. Glass-lined Grinnell-Saunders Diaphragm Valves, with KEL-F diaphragms, handle chlorinated organic chemicals at Hooker Electrochemical Company, Niagara Falls, N. Y.



EQUIPMENT MANUFACTURERS. Grinnell-Saunders valves with rubber linings are standard on filtration equipment for solution clarification, made by Industrial Filter & Pump Mfg. Co., Chicago, Ill.

For Air • Steam • Water
Hot • Abrasive • Corrosive
Gases, Liquids, Semi-Solids

Install ROCKWELL VALVES

- Manual or Automatic Control and Quick, Tight Shut-Off
- Made of any metal or rubber-lined
- Butterfly, Wafer Butterfly and Slide Valve Types, Threaded or Flanged
- Pipe sizes to 72" and larger



10" heavy duty, rubber-lined steel butterfly valve for 90 p.s.i.; with air cylinder controller and auxiliary clutch and hand-wheel.

18" alloy steel butterfly valve for 1100° F. operating temperature; with air diaphragm operator and valve positioner.

Write for Catalog and "The Valve News"



W. S. ROCKWELL COMPANY

Slide and Butterfly Valves • Steam Traps • Oil Burners

220 Elliot Street

Fairfield, Conn.

When inquiring check CP 9556 on handy form, pgs. 2-3

TABER for Higher PRACTICAL Performance PUMPS for PROCESS INDUSTRIES

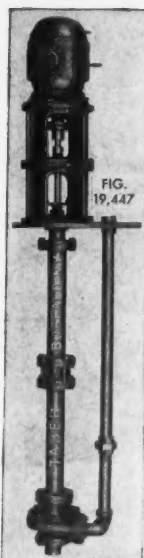


FIG.
19,447



For the processing industries pumps need to be built for definite requirements. For this reason Taber Centrifugal Pumps will always prove far superior to stock or trade pumps. • For example: there is a variety of impeller combinations for given-size casings; casings of various sizes for given-size yokes; over-size ball bearings, extra size shafts; extra deep stuffing boxes — all assembled and "Performance" Rated for final requirements of your job. • This is an indication of extreme flexibility and dependability of Taber Pumps. • Also pump built of any obtainable metal or alloy found suitable by customer. • Please use business stationery when writing for Bulletin CL-339.

TABER PUMP CO. (Est. 1859) 320 Elm St., Buffalo 3, N. Y.

TABER PUMPS

When inquiring check CP 9557 on handy form, pgs. 2-3

CONSTRUCTION

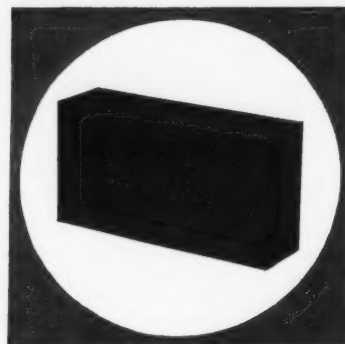
Fire brick sheds slag and increases life of installations . . .

available in 9" straights and most standard 9" series brick

Uses: Most ladles, blast furnace splasher plates, electric furnace runners, cupola spouts, etc.

Features: Ability to shed slag and thus prevent deterioration of the refractory material.

Description: Graftex, a clay-graphite refractory brick, is stated to



Slag-resistant clay-graphite brick

increase the life of installations having slag-erosion problems. At present time, this brick is available in 9" straights and most standard 9" series brick. Some special shapes can be produced on request.

(Manufacturer is North American Refractories Co., Dept. CP, 1012 National City-East 6th Bldg., Cleveland 14, Ohio . . . or for more information check CP 9558 on handy form, pages 2 and 3.)

Coupling eliminates welding scale from piping . . .

tongue and groove arrangement makes alignment easy

Uses: In connecting piping designed to carry certain chemicals and gases, hydraulic fluids, high pressure steam, compressed air, lubricating oil, fuel oil, etc.

Features: Forms no welding scale to damage valves, traps, pumps, and instruments. Coupling can be taken apart when piping is to be disassembled and it can be used again. When properly welded, the joint is leak-proof and as strong as the pipe itself.

Description: As seen in the accompanying photograph, the Tube-Turn SF (scale-free) Welding Coupling

(Continued on page 200)

Check CONAX

bare wire
THERMOCOUPLE
GLANDS
for

- ✓ Quick Response
- ✓ Accuracy
- ✓ Temperatures to 1400° F.
- ✓ Pressures Full Vacuum to 4000 psi.

Only Conax Stainless Steel Thermocouple Glands provide the practical way to use bare wire thermocouples without shields in pressure and vacuum areas and assure more accurate temperature measurements of gases, vapors, or liquids. Immersion depth of the hot junction is readily adjustable to any length.

Write TODAY for FREE Bulletin 951.

CONAX CORPORATION

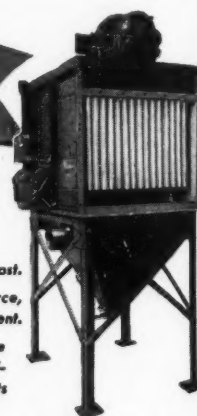
4515 Main Street

Buffalo 21, N.Y.

When inquiring check CP 9559 on handy form, pgs. 2-3

Save with Pangborn Unit-Type Dust Collectors

- ★ Economically priced.
- ★ Shipped assembled, to cut installation cost.
- ★ Small size permits locating at dust source, reducing piping cost, power requirement.
- ★ Using multiple unit collectors in place of "central" systems gives more flexibility, keeps various collected dusts separate for salvage.



Put this small, factory-assembled Pangborn type "CL" Dust Collector in areas of heavy dust concentration. All-metal construction (except filter cloth) . . . equipped with famous Pangborn non-sag screen frames (individually removable) and motor-driven screen shaker. Available in six sizes from 180 to 820 sq. ft. cloth area. Write for Bulletin 912 which gives specifications and engineering data to: PANGBORN CORP., 2700 Pangborn Blvd., Hagerstown, Md.

Look to Pangborn for the Latest Developments in Dust Control and Blast Cleaning Equipment

STOP THE DUST HOG from stealing profits with



Pangborn
DUST CONTROL

When inquiring check CP 9560 on handy form, pgs. 2-3

CHEMICAL PROCESSING

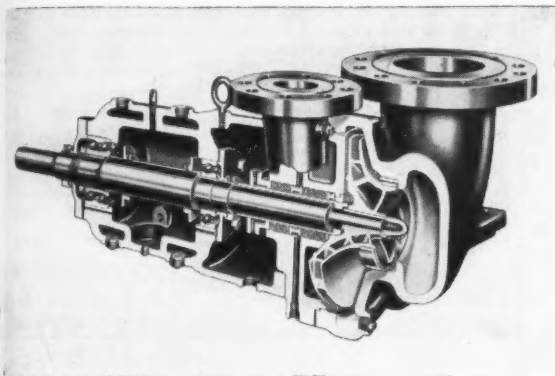
Center-line-mount design maintains alignment of high-temp pump . . .

internal joints are eliminated where differential pressure across them might cause leakage

Uses: To pump petroleum hydrocarbons, water and chemical solutions at elevated temperatures and pressures.

Features: Center-line-mount design maintains pump alignment at elevated temperatures. All internal joints have been eliminated where differential pressure across them would tend to cause leakage or erosion.

Description: Type PR is a heavy duty, horizontal, vertically split centrifugal pump. It is driven by an enclosed horizontal electric motor of standard make. Providing



Top suction-top discharge design

capacities to 1000 gpm and operating heads to 625', the pump's liquid end can be furnished in cast iron, bronze, carbon steel, stainless steel or other materials as required by the intended service.

Temperature of liquids pumped can be up to 850°F. Two models are offered: one with top suction-top discharge, the other with end suction-top discharge. Stuffing box is readily accessible for repacking through large windows in the bearing housing. For ease of maintenance and inspection, cantilever type bearing housing and spacer type coupling permit removal of the rotating parts without disturbing the piping or driver.

(Manufactured by Peerless Pump Division, Food Machinery and Chemical Corp., Dept. CP, 301 West Avenue 26, Los Angeles 31, Calif. . . or for more information check CP 9561 on handy form, pages 2 and 3.)

Tomorrow's Laboratory

(Continued from page 4)

sheet, tin-plate thickness, acidity of waste liquors, and many other process steps. A continuous recorder can be invaluable in locating faults or diagnosing process ills. It may be invaluable also in case of accident or litigation involving air or stream pollution.

There was the time when the prestige of a laboratory instrument was more or less a function of the number of its knobs, dials, switches, and so forth. But today, manual adjustment has been replaced with automatic compensation for drift, temperature, battery potential, and other changing

(Continued on page 201)

**Now a new name
to start our second half century . . .**

**CHICAGO
METAL HOSE
CORPORATION**

**Sales operations are divided
into four logical divisions**

CHICAGO METAL HOSE DIVISION

Corrugated and convoluted flexible metal hose, machine tool conduit, refrigeration conduit, "Vibra-Sorber" vibration eliminators for piping, and assemblies for specific applications.



AIRCRAFT DIVISION

Stainless steel aircraft components including hose of all types, bellows, oil and fuel lines, air lines, ducting and connectors of all types and many special assemblies for jet aircraft.



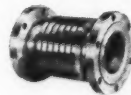
FLEXON BELLOWS DIVISION

Stainless steel bellows, brass and bronze bellows, automobile thermostats and bellows and bellows assemblies and devices for all types of standard and specialized applications.



EXPANSION JOINT DIVISION

Standard corrugated packless type expansion joints in free-flexing and controlled-flexing construction, high pressure Flexoniflex expansion joints, heat riser expansion joints, and special joints.



Flexonics



Flexon identifies CMH products that have served industry for over 50 years.

1319 S. THIRD AVENUE • MAYWOOD, ILLINOIS
FORMERLY CHICAGO METAL HOSE CORPORATION

Manufacturers of Convoluted and Corrugated Flexible Metal Hose in a Variety of Metals • Expansion Joints for Piping Systems • Stainless Steel and Brass Bellows • Flexible Metal Conduit and Armor • Assemblies of These Components
In Canada: Flexonics Corporation of Canada, Ltd., Brampton, Ontario

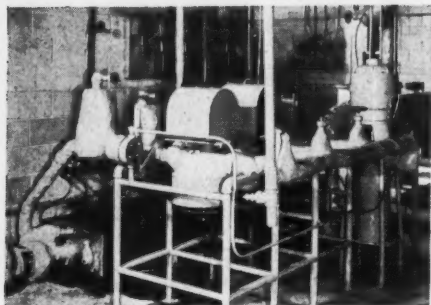
Flexonics
Corporation

• In 1947, Chicago Metal Hose Corporation introduced to industry a new science—the science of Flexonics. It is defined as the controlled bending of thin metals for use under varying conditions of temperature, pressure, vibration and corrosion. This definition so well describes our operations and the expanding range of our products that we are adopting it as our corporate name coincident with our 50th anniversary year.

Let us assure you, however, that the change from Chicago Metal Hose Corporation to Flexonics Corporation involves no change in management, personnel or methods of operation except for internal organizational changes that will make it possible for a fast growing company to serve its customers better.

When inquiring check CP 9562 on handy form, pgs. 2-3

8 TIMES FASTER!



This Bowser continuous blending system has speeded up the production of low-temperature plastic waxes and other protective coatings to nearly 8½ times the former batch methods used by the Sure-Seal Corporation of Salt Lake City.

Operating records show greater uniformity of product, freedom from oxidation, accuracy within 1/10 of 1% . . . as direct results of installing this continuous production system.

IF YOU BLEND OR MIX 2 OR MORE LIQUIDS

There's an experienced Bowser sales engineer in your vicinity who will gladly check your present liquid processing methods. He'll be glad to tell you how production can be increased and costs cut, and at no obligation to you.

● MAY WE SEND YOU OUR NEW FOLDER ON BOWSER BLENDING SYSTEMS?

BOWSER, INC., 1315 Creighton Ave., Fort Wayne 2, Ind.



LIQUID CONTROL SPECIALISTS SINCE 1885

When inquiring check CP 9563 on handy form, pgs. 2-3

for
• SPRAYING • WASHING • RINSING • COOLING • AIR CONDITIONING

Get the most out of your Spraying Equipment with minimum power . . . with efficient spraying.

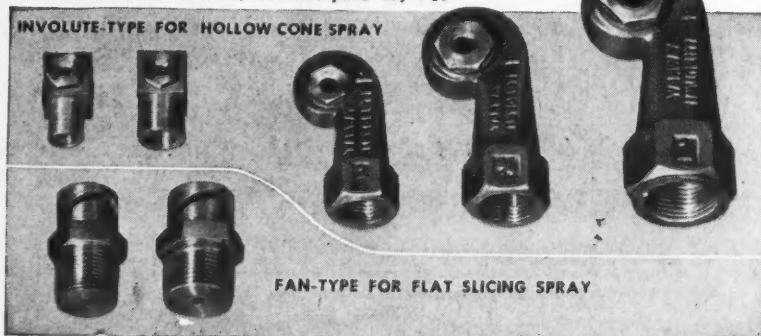
Use Yarway Nozzles. No internal vanes or other restrictions to clog or hinder flow. Two types—Yarway Involute-type producing a fine hollow spray with minimum energy loss, and Yarway Fan-type producing a flat fan-shaped spray with time-saving slicing action for cleaning.

Wide range of standard sizes and capacities. Cast or machined from solid bar stock.

Thousands in use. Write for Bulletin N-616.

YARWAY SPRAY NOZZLES

YARNALL-WARING COMPANY
125 Mermaid Avenue, Philadelphia 18, Pa.



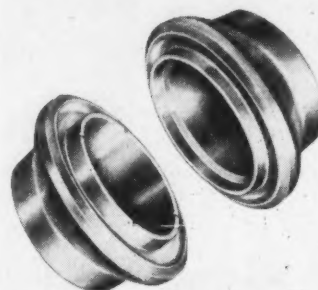
When inquiring check CP 9564 on handy form, pgs. 2-3

CONSTRUCTION

(Continued from page 198)

consists of two forged halves. When the two parts are brought together, the tongue of one slips into the groove of the other — making alignment easy.

To prevent burn-through or the formation of icicles inside during welding,



Coupling can be taken apart when piping is to be disassembled and reused

a circumferential cavity is located directly beneath the beveled welding area. This cavity also insulates the interior from the extreme welding heat and prevents scaling.

Available in sizes from 1¼ to 12", the coupling is fabricated of carbon steel, stainless steel, aluminum and other metals and alloys.

(Tube-Turn SF Welding Coupling is available from Tube Turns, Inc., Dept. CP, 224 E. Broadway, Louisville 1, Ky. . . . or for more information check CP 9565 on handy form, pages 2 and 3.)

Heavy DC supply stands overload to 600% . . .

rectifies 3-phase source to power loads from 3 to 50 hp

Uses: Supplies DC power to heavy loads with 220v 3-phase AC source.

Features: Overload and surge capacity is up to 600% of normal rating.

Description: Selenium Rectifier supplies 230v DC for loads up to 50 hp. Various models are available from 3 hp and up. Typical 25 hp unit is housed in steel cabinet 26 x 40 x 65" high. Usual characteristics (i.e., long life, noiseless operation, no moving parts, no warm up period) prevail. Efficiency of the unit is about 80%, with stand-by power being correspondingly low.

(Built by Mellaphone Electronic Rectifier Co., Inc., Dept. CP, Rochester 2, N. Y. . . . or for more information check CP 9566 on handy form, pages 2 and 3.)

Q.

What is the simplest means of producing suction pressures down to .002"?

A.

The I-R STEAM-JET EJECTOR



11 Broadway,
New York 4, N. Y.

Producing suction pressure by means of a steam jet and venturi-shaped diffuser, it operates *without any moving parts!* There's nothing mechanical to wear out—nothing to lubricate—nothing to require adjustment or replacement. No vibration, either. And little or no foundation is required for installation.

I-R Steam-Jet Ejectors are designed for high sustained efficiency with practically no attention or maintenance. They are available in single-stage, two-stage and multiple-stage types for vacuum pressures down to .002" Hg absolute—in any desired capacity, for handling any mixture of air, gases and vapors.

Pre-coolers, intercondensers and after-condensers can be supplied as required for any application. For further information, send for Bulletin 9013A. No obligation, of course.

684-4

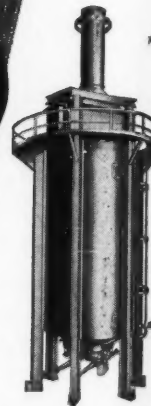
Ingersoll-Rand

When inquiring check CP 9567 on handy form, pgs. 2-3

★ For Direct Heating of Liquids and Vapors

★ Indirect Heating Systems Using Circulating Medium

Struthers-Wells
FIRE HEATERS
for the Process Industries



Struthers Wells direct fired heaters are available in sizes from 100,000 to 25,000,000 BTU per hour, for heating gasoline, oils or asphalts, superheating steam or gas, and for indirect heating systems.

Struthers Wells indirect heating systems give economical —trouble-free operation at temperatures to 750° F., or above.

If your process requires temperatures above those of existing steam supply—if steam is not available, or if the process can be improved by higher temperatures, investigate this simple and economical equipment. • Write on your letterhead for Bulletin B-45, describing our complete line of equipment for high temperature process heating.



STRUTHERS WELLS CORPORATION
Warren, Pa.

PLANTS AT WARREN, PA. • TITUSVILLE, PA.
Offices in Principal Cities

When inquiring check CP 9568 on handy form, pgs. 2-3

CHEMICAL PROCESSING

(Continued from page 199)

conditions. The ultimate instrument might be envisioned as one which has only an off-on switch — all its operations being automatic. Among the advantages of such an instrument are consistent accuracy because the operator cannot forget any critical adjustment, the need for fewer skilled workers, the release of trained operators for other tasks.

And the instrument will continue to take more of the responsibility for its measurement. In the early days of absorption spectrometry, the operator had to laboriously convert his linear intensity readings into the logarithmic concentration figures. His slide rule and log tables have now been replaced with an electronic circuit. The answer that the spectrometer now gives is directly in concentration. A logical extension of this phase of the instrument's work is the analog-digital computer. This instrument converts readings of the variable into digital readings and punches cards or tape for use in further computations. Equipment of this sort will unquestionably find increasing use in the laboratory to multiply personnel effectiveness.

New physical principles and phenomena will continue to be a fertile source of instrument technique. Magnetic susceptibility, for example, is now being used to determine the oxygen content of gases. What are the other possibilities for future instruments? They are in fields like mass spectrometry, electron diffraction, microwave spectrometry (beyond the infrared), and X-ray spectrometry. Flame spectrometry is merely a revival of the work of Kirchhoff and Bunsen, yet it has made possible a rapid, inexpensive determination of some forty elements in very low concentration in a sample of only a few drops. Here is the very tool for which the medical analyst has been searching. Similarly, protein chemistry will depend upon improved electrophoretic equipment. Many potentialities remain to be explored in nuclear phenomena. Already nuclear magnetic moment is being seriously considered as a new basis for chemical analysis.

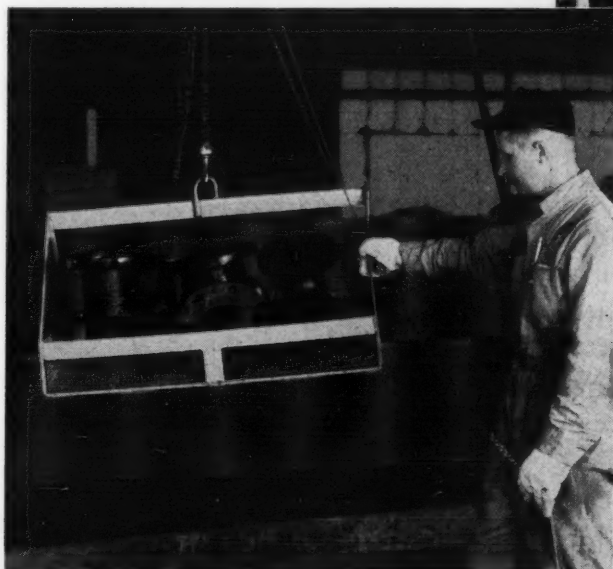
Micro techniques will undoubtedly continue to be important. Trace elements have acquired an important place in the fields of nutrition, medicine, agriculture, and photography. In the next few years monitoring apparatus will check ambient atmosphere for trace pollutants, too.

Electronics has been a key to our present state of instrument development. With manufacturing techniques born of war production, and with the tremendous radio and television industry of this country, as well as our store of components, ideas, and trained personnel, we are far more electronic-minded in instruments than other countries are.

Electronic instruments are shrinking — being miniaturized — and they will continue to get smaller. Tubes which had gone from the older style to miniature sizes are now appearing in subminiature sizes. Transistors appear to be a likely successor to electronic tubes. Among their several advantages are small size and dependability. Although few laboratory instruments today use printed circuits, these too will enter the instrument picture as metal-coated plastics and similar materials come into wider use. To the user this will mean less expensive instruments which are simpler to repair. Instead of conventional repair, simply plugging in a hermetically sealed unit circuit will return the instrument to use.

Generally speaking, the instrument in tomorrow's laboratory may be a rather small unit with flat surfaces and rounded corners. The smooth gray finish and relatively few projections or recesses will make it easy to clean, easy to work with. Hermetic sealing and corrosion-resistant materials will allow it to be used under conditions which would be detrimental to present instruments. Among the few controls will be one which allows the operator, after making a few readings with the instrument itself, to locate and repair worn-out or faulty parts.

DON'T SCRAP DIRTY EQUIPMENT!



Same fittings after final rinse

USE VIRGO MOLTEN CLEANER ON:

| | | |
|----------|-------|------------|
| Valves | Pipe | Tanks |
| Fittings | Pumps | Condensers |

and hundreds of other salvageable items

QUICKLY REMOVES:

| | | |
|--------|--------|-----------------------|
| Grease | Rubber | Atmospheric Corrosion |
| Paint | Enamel | Chemicals |
| Dirt | Glass | |

Does not harm the metal!

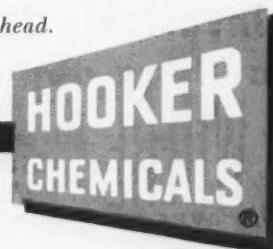
For details, write us today on your business letterhead.

From the Salt of the Earth

HOOKER ELECTROCHEMICAL COMPANY

15 FORTY-SEVENTH ST., NIAGARA FALLS, N. Y.

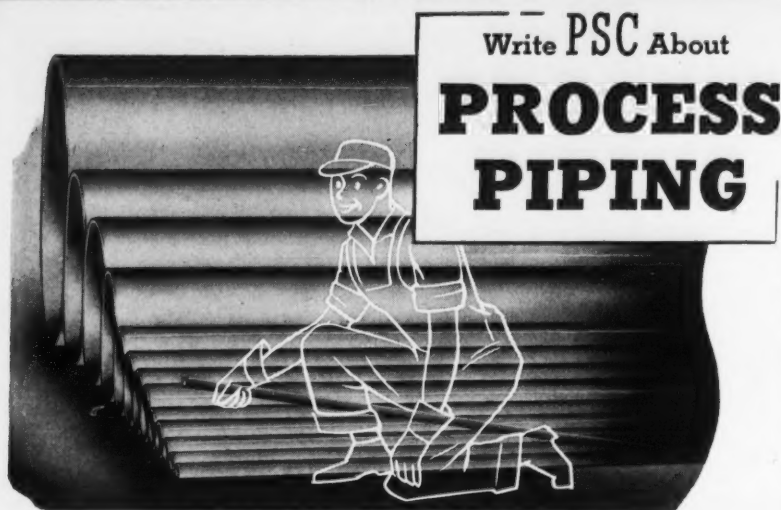
NEW YORK, N. Y. • WILMINGTON, CALIF. • TACOMA, WASH.



1-1740

CHLORINE • CAUSTIC SODA • MURIATIC ACID • SULFUR CHLORIDES • VIRGO® DESCALING SALT • VIRGO® MOLTEN CLEANER

When inquiring check CP 9569 on handy form, pgs. 2-3



Write PSC About **PROCESS PIPING**

**Fabricated from Complete Range of Alloys,
Any Diameter Up to 60", and in Any Shape**

PSC welded process tubing is furnished in any alloy whatsoever. This feature accounts for its wide application in meeting the unlimited variety of heat, corrosion, oxidation conditions in process plants.

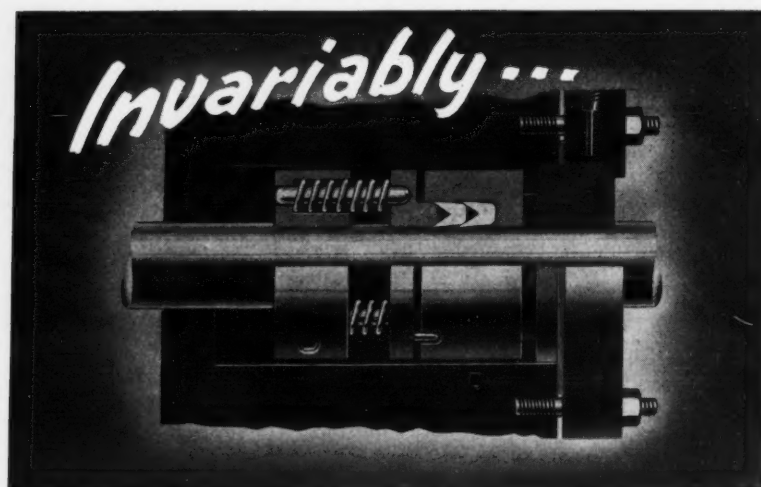
Any diameter up to 60"; wall thicknesses to 3/8"; temperatures to 2200°. Precision fabrication of tubing assemblies is a specialty. Send b/p or write as to your needs.

THE PRESSED STEEL CO., 709 N. Penna. Ave., Wilkes-Barre, Pa.



Custom Fabricators for the Process Industries Since 1928. Send Your Blue Prints

When inquiring check CP 9570 on handy form, pgs. 2-3



...invariably it's **DURA SEAL**
for long dependable service

WHERE

...ECONOMICAL OPERATION IS DESIRED
...OPERATING CONDITIONS ARE HAZARDOUS
...LOSS OF COSTLY FLUIDS MUST BE PREVENTED
...COMPLETE AND PERFECT SEALING REQUIRED

GET THE "DURA SEAL" STORY - WRITE FOR BULLETIN 174 CP

DURAMETALLIC **CORPORATION**
KALAMAZOO MICHIGAN

When inquiring check CP 9571 on handy form, pgs. 2-3

CONSTRUCTION

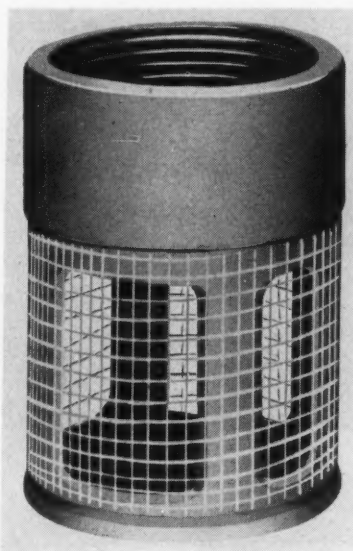
**Costs reduced since
1 1/2" strainer fits
2" tank opening . . .**

permits maximum flow and doesn't trap water or sediment

Uses: Intended for use in pump suction lines.

Features: Design is such that the liquid must enter from the sides instead of the bottom. This feature does not trap water and keeps the line free from foreign matter and sediment while permitting maximum flow.

Description: Known as 611C, this suction line strainer is constructed of galvanized iron, and contains an 8 mesh screen. Its outside diameter fits a 2" tank opening and is threaded for 1 1/2" pipe thread. By this arrangement, repair costs are reduced. On



existing installations where volatile compounds have been used, the 611C will eliminate the danger of an explosion set off by sparks caused when chipping out existing bushing.

(Development of Universal Valve Co., Dept. CP, Elizabeth, N. J. . . or for more information check CP 9572 on handy form, pages 2 and 3.)

**Paint-on chrome-like finish
is for use on surfaces
that reach 1200°F . . .**

one coat covers, special fusing action assures adhesion

Uses: Aluminum paint suggested for applications on furnace fronts, boilers, ovens, smoke stacks, diesel stacks, engines, steam pipes, etc.

Features: Extreme resistance to heat — up to 1200°F. One coat yields a



STRAINERS AND FILTERS AVAILABLE IN ALL TYPES AND SIZES

A longer lasting, accurately made filter or strainer increases your profits at every application. The skilled craftsmanship and selected quality materials used in the manufacture of Cleveland Wire Screen is your yardstick for discriminating buying. Custom designed strainer elements are produced in small or large production runs from Chrome Nickel or Copper Alloys. Write for Strainer and Filter Bulletin No. 7.

A CLEVELAND WIRE SCREEN FOR EVERY PURPOSE

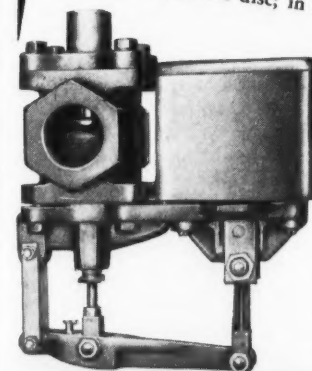
THE CLEVELAND WIRE CLOTH & MFG. CO.
3574 E. 78 STREET • CLEVELAND 5, OHIO

When inquiring check CP 9573 on handy form, pgs. 2-3

JOHNSON Direct Acting Solenoid Valve — for 150 lbs. Differential Pressure . . .

You can get a solenoid valve that operates under differential pressures up to 150 lbs., temperatures to 400°F., without pilot valves. It ends the time lag and wiredrawing that come with slow opening of automatic, or remote, flow control. Johnson Solenoid Valves are available for normally closed or normally open service; with stainless steel valve and seat or Jenkins disc; in sizes from 1/2" to 3".

Write for
Bulletin "V"



**WHERE CAN
YOU USE THIS
AUTOMATIC VALVE?**

- No pilot valves
- Temperatures to 400°F.
- Differential Pressures to 150 lbs.
- Immediate full flow
- Heavy duty construction

The Johnson Corporation

826 WOOD ST.

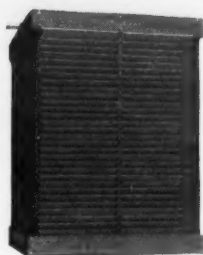
THREE RIVERS, MICHIGAN

When inquiring check CP 9574 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Naturally the Best!

MARLEY Natural Draft Cooling Towers



- **MARLEY DESIGNED** to minimize drift but to take advantage of air flow!
- **BALANCED SPRAY SYSTEM** with patented Marley nozzles!
- **RUGGED CONSTRUCTION** of heart red-wood lumber.
- **DELIVERY** when and where you want it from stocks in many cities. Prefabricated for easy field assembly.

Call your local Marley Representative

MARLEY The Marley Company Inc.

Kansas City 5, Missouri

When inquiring check CP 9575 on handy form, pgs. 2-3

Glove Buying Know-How Pays You Dividends!



Stanzails®

The right glove for every job pays off in:

- ★ More glove service at lower per-hour cost
- ★ Full protection for your workers
- ★ Fewer work stoppages and injury claims
- ★ More production through faster-working hands

NL-34 Duplex. Lightweight, elastic knit lined, neoprene-coated. Non-slip fingers. Utmost comfort.

Lack of glove protection costs you money—but so does loss of worker efficiency. No one glove is effective for all jobs in your plant. Get the best combination of protection and working speed. PIONEER'S new catalog tells you

how! *Advice is unbiased, for Stanzails include all kinds of liquid-tight gloves: all-neoprene, neoprene or vinyl-coated; 32 styles, weights, sizes, colors. Scientific selection boosts profitable production. Write for this helpful catalog today!*

Industrial Products Division

The PIONEER Rubber Company

641 Tiffin Road • Willard, Ohio



OVER 30 Years OF QUALITY GLOVE MAKING

When inquiring check CP 9576 on handy form, pgs. 2-3

CONSTRUCTION

chrome-like finish that will not peel, discolor, or blister. Fusing action assures lasting adhesion.

Description: Hi-Temp aluminum paint can be sprayed or brushed. Ordinarily requires 1 hour to dry on hot surfaces and 2 hours on normal surfaces.

Surfaces to be covered require merely conventional cleaning procedures. Coverage is approximately 800 square feet per gallon.

(Product of the Illinois Bronze Powder Co., Dept. CP, 2023 S. Clark St., Chicago 16, Ill. . . . or for more information check CP 9577 on handy form, pages 2 and 3.)

Inert Teflon used in bellows-type connector . . .

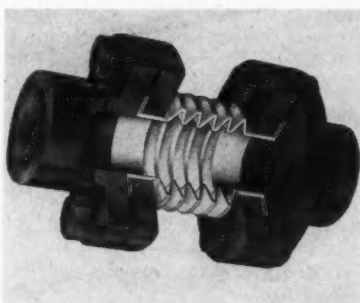
withstands repeated flexing without damage; non absorbent

Uses: Serves as a vibration damper as well as an expansion joint. Connects misaligned couplings and insulates flanges electrically.

Features: Provides maximum contraction and expansion; withstands repeated flexing without damage.

Description: John Crane Bellows Connectors are fabricated of chemically inert Teflon. It is stated to be as strong at 480°F as at 70°F and to retain flexibility at temperatures as low as -94°F. Material is non absorbent and heat resistant.

End flanges of the joint are French-



French-type gasket provides easy installation of bellows connector

type envelope gaskets made integral with the joint for easy assembly between companion flanges and a tight, leak-proof seal on installation.

Connectors are made according to specifications in a wide range of sizes.

(These bellows connectors are manufactured by Crane Packing Co., 1800 Cuyler Ave., Chicago, Illinois . . . or for more information check CP 9578 on handy form, pages 2 and 3.)

Automatic Sprinkler 10-point FIRE PROTECTION

YOU NEED IT...

only "Automatic" Sprinkler provides it!

Fire protection is serious business. A single automatic sprinkler may be called on to decide the fate of your company, whether it is a small single-plant operation or a large multi-million dollar corporation. Insist on all the plus values offered with 10 POINT Fire Protection. Here's what you get:

- 1 **JOB SURVEY and ENGINEERING ANALYSIS:** Detailed to meet individual needs.
- 2 **BASIC FIXED TEMPERATURE SYSTEMS:** Improved devices for fire detection and water extinguishment.
- 3 **RATE-OF-TEMPERATURE-RISE PROTECTION:** Recognized leaders in the development of high speed systems for all fire hazards.
- 4 **QUALITY CONTROL:** All system components—material and manufacture.
- 5 **ACCURATE PREFABRICATION:** Reduced installation time and expense.
- 6 **QUALIFIED INSTALLATION CRAFTSMEN:** Experienced in fire protection for all types of property.
- 7 **NATIONWIDE ORGANIZATION:** Expert fire protection engineers at your immediate service.
- 8 **INSPECTION AND MAINTENANCE:** Low cost service keeps fire-fighting equipment in fire-fighting condition.
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- 10 **CONVENIENT PAYMENT CONTRACTS:** Liberal lease, cash, or deferred plans permit payment out of savings.

Your "Automatic" Sprinkler Fire Protection Engineer is as near to you as your telephone. Call him today!

"AUTOMATIC" SPRINKLER CORPORATION OF AMERICA
YOUNGSTOWN 1, OHIO
OFFICES IN PRINCIPAL CITIES OF NORTH AND SOUTH AMERICA

Get the facts!

Write for our informative 36-page book, "The ABC of Fire Protection." It's free!

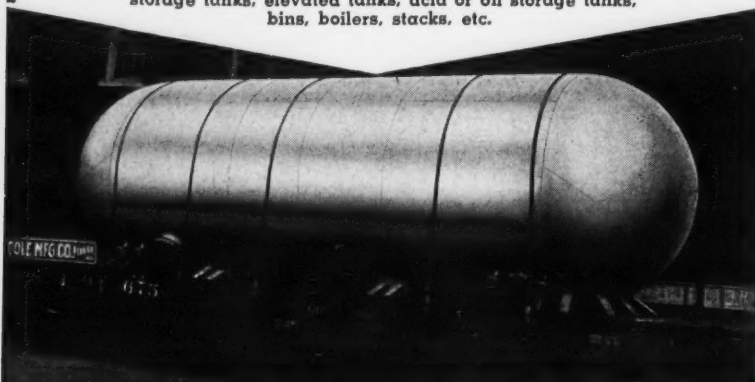


"Automatic" Sprinkler
FIRST IN FIRE PROTECTION

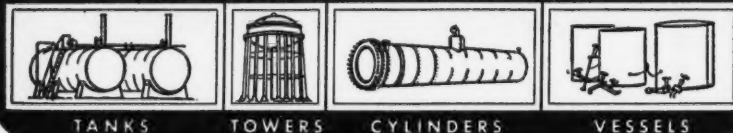
When inquiring check CP 9579 on handy form, pgs. 2-3

COLE ALUMINUM TANKS

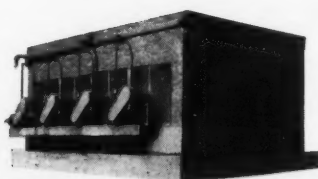
We have available stock sizes from 9,500 to 22,800 gallons for pressure storage, and tanks of 99.6% pure aluminum for hydrogen peroxide from 5,000 to 11,150 gallons. "Cole" can furnish tanks made of steel, aluminum and stainless steel — built in accordance with ASME Code — to meet all insurance requirements. We invite your inquiries for high pressure storage tanks, elevated tanks, acid or oil storage tanks, bins, boilers, stacks, etc.



R. D. COLE MFG. CO.
NEWNAN, GA. Established 1854



When inquiring check CP 9580 on handy form, pgs. 2-3



IMPROVED

INDUSTRIAL

COOLING TOWERS

Designed to meet actual—not theoretical—operating needs, the 600-GPM, forced-draft Aqua-Therm Cooling Tower shown above accomplishes in its area, 12'-6" x 20'-0" x 8'-0" high, what few towers more than twice its height can achieve. Installed at a Gulf Coast chemical plant, this tower takes ON water at 118°F and takes it OFF at 86°F —with an air wet bulb reading of 80°F. Aqua-Therm "know how"—in utilizing maximum results from the surface area potential of the ceramic saddle fill material (see left)—also reduces pumping horsepower requirements by 50% or more and eliminates almost 100% of drift. Let Aqua-Therm solve your cooling tower problems!

SCRUBBING & PROCESS TOWERS
ACID-PROOF EQUIPMENT AND CONSTRUCTION

Aqua-therm Inc.
DAYTON, OHIO

When inquiring check CP 9581 on handy form, pgs. 2-3

CONSTRUCTION

Tanks fabricated from rigid polyvinyl plastic . . .

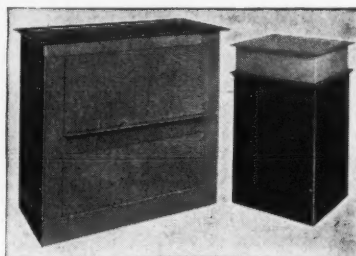
does not deteriorate with age or become brittle at low temps

Uses: Equipment fabricated from material is especially applicable where highly corrosive conditions prevail.

Features: Material does not deteriorate with age or become brittle at sub-zero temperatures.

Description: Polydur is the polyvinyl chloride plastic from which the tanks are fabricated as well as hoods, vents, ducts, etc. Tanks are being made in two types—self-supporting made from sheets 1/4 to 1" thick and liners for wood, concrete or metal tanks in which case the sheet thickness is 1/8".

Polydur is capable of resisting acids, alkalis, salts, oxidizing agents, oils,



Plastic tanks require no inside or outside coating

greases, alcohols, gasoline, etc., up to 170°F without dimensional deformation—and without loss of chemical properties at higher temperatures. The tanks and other fabrications do not require coating material—either inside or out.

(Polydur tanks and other products are made by Munray Products, Inc., Dept. CP, 12400 Crossburn Ave., Cleveland 11, Ohio . . . or for more information check CP 9582 on handy form, pages 2 and 3.)

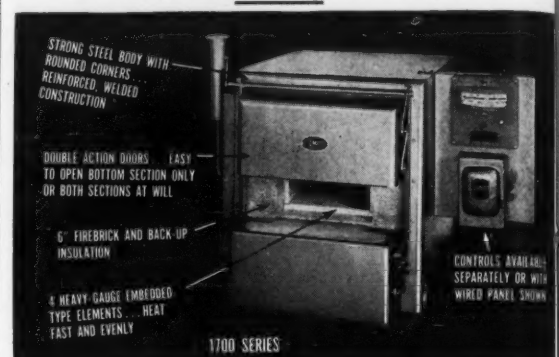
Hydraulic cylinders specified

Catalog provides technical and engineering data on rotating and non-rotating cylinders as an aid in determining size and type for various requirements. Manufacturer's 750 Series described and illustrated herein is designed for operating pressures up to 750 psi.

A representative group of hydraulic control valves is also included. Cat 200, Section 3 is issued by Logansport Machine Co., Inc., Dept. CP, Logansport, Ind. When inquiring specify CP 9583 on handy form, pages 2 & 3.

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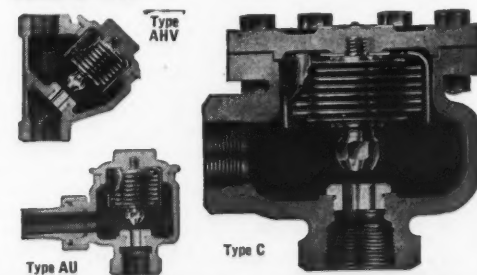
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Convention & Exhibit Schedule 1952

March 10-14. National Association of Corrosion Engineers, 1952 Annual Conference and Exhibition, Galvez Hotel, Galveston, Tex.

March 11-14. The Society of the Plastics Industry, Inc., Fifth National Plastics Exposition, Convention Hall, Philadelphia, Pa.

March 16-19. American Institute of Chemical Engineers, Regional Meeting, Biltmore Hotel, Atlanta, Ga.

March 20. Commercial Chemical Development Association, Annual Open Meeting, Statler Hotel, New York, N. Y.

March 22-April 6. Chicago International Trade Fair, Navy Pier, Chicago, Ill.

March 26-28. American Power Conference, First Annual Conference, Sherman Hotel, Chicago, Ill.

April 7-9. The American Society of Lubrication Engineers, Seventh Annual Meeting and Lubrication Show, Hotel Statler, Cleveland, Ohio.

April 9-11. The Society of the Plastics Industry, Inc., Seventh Annual Technical Session, SPI Reinforced Plastics Division, Edgewater Beach Hotel, Chicago, Ill.

May 11-14. American Institute of Chemical Engineers, Regional Meeting, French Lick Springs Hotel, French Lick, Ind.

Sept. 4-6. American Institute of Chemical Engineers, Regional Meeting, Palmer House, Chicago, Ill.

Sept. 8-12. Instrument Society of America, National Instrument Conference and Exhibit, Cleveland, Ohio.

Sept. 9-13. American Chemical Society, Chicago Section, Seventh National Chemical Exposition, Chicago Coliseum, Chicago, Ill.

Lecture series giving chemists engineering slant

The North Jersey Section of the American Chemical Society is currently presenting a lecture series, "Chemical Engineering for the Chemist," at the Research and Development Laboratories of Merck & Co., Inc., in Rahway, N. J. The series of ten weekly lectures started February 5th. Dates, titles, and speakers are as follows:

February 5—"Fundamentals of Chemical Engineering," Mr. Chalmers G. Kirkbride, Houdry Process Corporation.

February 12—"Fluid Flow and Heat Transfer," Dr. Donald Q. Kern, Patterson Foundry & Machine Co.

February 19—"Separation Techniques—Distillation," Dr. Edward G. Scheibel, Hoffman-La Roche, Inc.

February 26—"Separation Techniques—Extraction," Prof. Robert E. Treybal, New York University.

March 4—"Separation Techniques—Ion Exchange," Dr. Robert Kunin, Rohm & Haas Company.

March 11—"Agitation and Mixing," Dr. Gordon MacLean, Allied Molasses Co.

March 18—"Pilot Plant Techniques," Dr. W. C. McIntire, American Cyanamid Company.

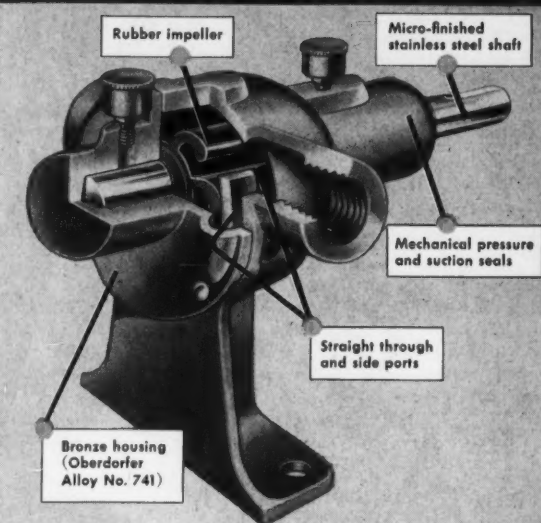
March 25—"Taking a Process Into the Plant," Dr. H. E. Silcox, Merck & Co., Inc.

April 1—"Corrosion Problems and Materials of Construction," Prof. Mars G. Fontana, Ohio State University.

April 8—"Chemical Engineering Economics," Prof. John Happel, New York University.

Mr. Robert E. Jones of Merck is chairman of the lecture series committee.

New! Series IV OBERDORFER INTERNATIONAL Rubber Impeller BRONZE Pumps



These rubber impeller pumps were designed to meet the demand for low pressure transfer pumps which could economically handle a high percentage of corrosive solids in suspension.

The Oberdorfer design has stressed port openings for maximum flow capacity while maintaining a wide area of wall support for the impeller. This results in a highly efficient mechanism with a long service life when handling many contaminated liquids.

These pumps are self-priming to about 20 feet when the impeller blades are wet. Where possible a check valve should be installed on the suction side of the pump to insure constant pressure of the liquid being pumped about the impeller. Drive may be either clockwise or counter-clockwise. Maximum pressures range between 20-30 p.s.i. The rubber impeller is keyed to the shaft and may be replaced in a matter of minutes.

| CAPACITY TABLES | | Gallons of water per minute — 1,725 R.P.M. Outlet pressure in feet head and p.s.i. | | | | | | | | |
|-----------------|------|---------------------------------------------------------------------------------------|--------|-----|--------|-------|--------|--------|--------|-------|
| Pump No. | Size | Ft. hd. p.s.i. | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 |
| RA | 1/2" | | 0 | 4.3 | 8.7 | 13.0 | 17.3 | 21.6 | 26 | 30 |
| RB | 3/4" | | 6 1/2 | 6 | 5 1/4 | 4 1/4 | 3 1/2 | 2 1/2 | 1 | — |
| RC | 1" | | 10 3/4 | 10 | 9 | 8 | 7 | 5 1/2 | 4 3/4 | 2 1/4 |
| | | | 21 1/2 | 20 | 18 1/2 | 17 | 15 1/2 | 13 1/2 | 11 3/4 | 8 1/2 |

| APPROXIMATE DIMENSIONS | | | | |
|------------------------|--------|--------|--------|---------|
| Pump No. | Length | Width | Height | Price |
| RA | 5 1/2" | 4" | 3 3/8" | \$16.00 |
| RB | 6" | 4 1/4" | 4 7/8" | 21.00 |
| RC | 7 1/8" | 5" | 5 3/4" | 28.00 |

INDUSTRIAL PUMP DIVISION
Oberdorfer Foundries, Inc.
622 Thompson Rd., Syracuse, N. Y.

See our catalog in Sweet's File for PRODUCT DESIGNERS

When inquiring check CP 9586 on handy form, pgs. 2-3



FORTY YEARS AGO the automobile was a rich man's toy. TV and radio were unheard of. Refrigeration? You hung a card in the front window to signal the ice man.

Today we drive 40 million cars, listen to 90 million radios, keep food in 33 million refrigerators.

Yet millions in the rest of the world are still groping in the primitive darkness of 40 years ago.

Why have we moved ahead? Competition is a chief reason. Only competition in business has made luxuries commonplace in your home today. Competition, for example, in the production and sale of steel and things made out of steel.

Steel makes progress possible—in war or peace . . . in the manufacture of everything from tableware to tanks, razor blades to skyscrapers, baby carriages to "Big Mo".

How well does this competition of ours work in the steel business?

. . . The U.S.A. shows an 83.4% gain in steel output between 1939 and 1950. The rest of the world shows an 0.8% loss.

. . . In 1939, the U.S.A. under "competition"

made $\frac{1}{3}$ of all the world's steel. Today we produce half—all with only 6% of the people in the world.

. . . Steel workers under "competition" gained in jobs, too. There were 449 thousand jobs in 1939. Today—637 thousand.

The steel industry is just one example of how a free competitive system works. Ours is the security millions of people in the world dream of when they embrace such dead-ends as "planned economies".

Look around and see what happens when people hand their jobs and factories over to the government. Or have them taken by law. Or by force. Name it what you will—"communism", "nationalization", "socialism", "regimentation"—it is a one-way street, and no turning back. By then people no longer own government. Government owns the people.

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Discussed in This Issue - - -

PROCESSES, EQUIPMENT and MATERIALS

Use this "quick-locator" when you want information on a specific type of process, equipment or material mentioned in the processing stories or the advertisements in this magazine. Everything discussed in this issue is given here, if you want more data you can write manufacturer direct . . . or turn to pgs. 2-3 and use the handy "Information Request Slip." This is a special service provided by the publisher . . . no obligation or charge, of course. The publisher contacts the proper manufacturers for you—information comes to you direct.

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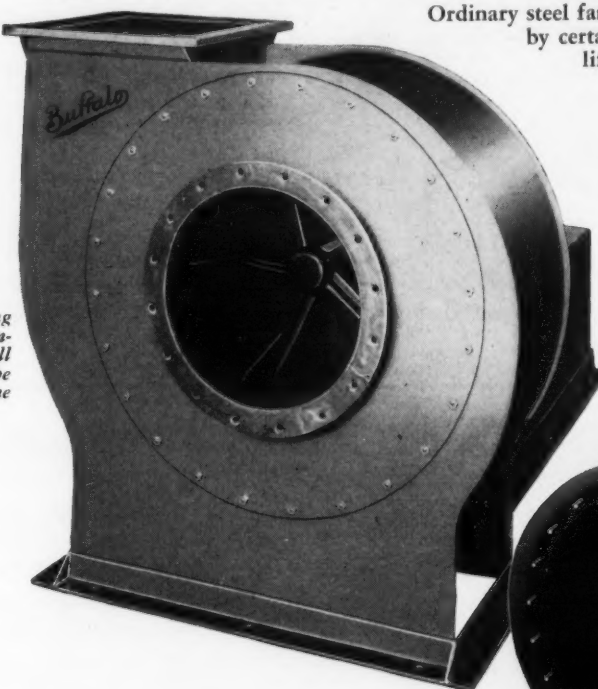


Tips on Making Your Fans Last

SPECIFY RUBBER-LINING FOR YOUR CORROSIVE FUME FANS — It Will Multiply Their Life



Above, showing how rubber lining protects all steel parts of the fan from fume corrosion.



Ordinary steel fan housings and rotors are quickly destroyed by certain fumes, but rubber coating increases fan life three to twelve times. "Buffalo" Rubber-Lined Fans have rubber "welded" to all interior parts by the "Vulcalok" process. No metal parts are left exposed.

Naturally, efficiency, smooth rotor balance and proper performance characteristics also enter into the choice of a good fume fan. We welcome your inquiries into the entire "Buffalo" line of fans which have been proving themselves in the chemical industries for many years.



WRITE FOR THIS

HELPFUL INFORMATION ON FUME HANDLING!



Bulletin 2424-E contains construction and performance information on "Buffalo" Rubber-Lined Exhausters and their application. Yours for the writing!



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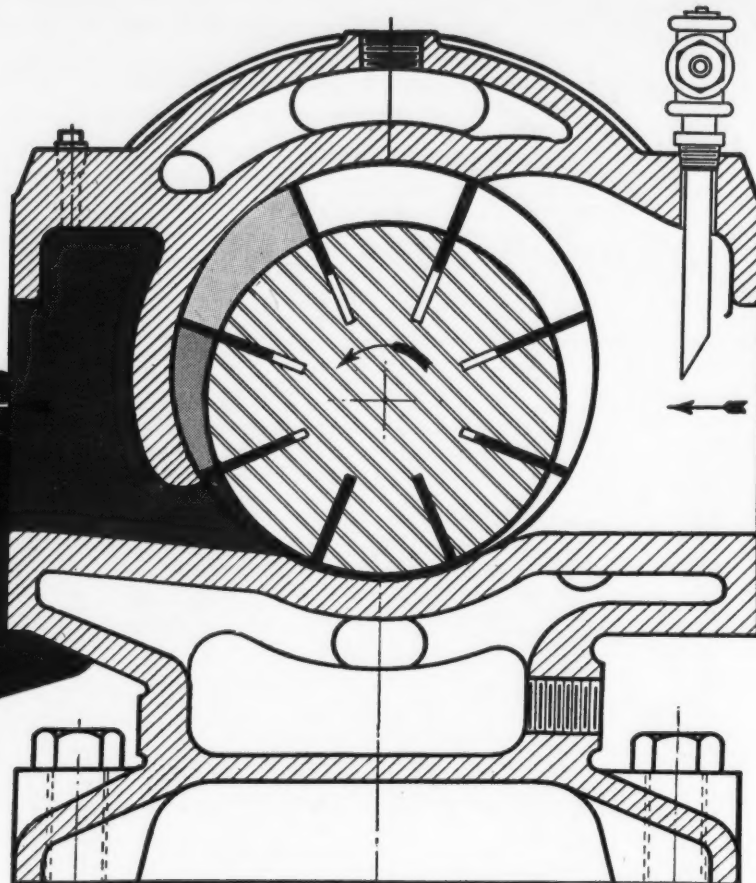
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PRESSURE BLOWING

EXHAUSTING
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efficient and
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the FULLER ROTARY COMPRESSOR

For compressing gas, no reciprocating compressor can compare in simplicity and operation with a rotary.

PRINCIPLE IS SIMPLE

An eccentrically mounted, accurately machined rotor, with integral shaft, is supported on roller bearings in each of the heads. The eccentric rotor mounting leaves a crescent-shaped space, which is divided into compartments by wear-compensating blades. These slide freely in milled slots in the rotor, and are held, pressure tight, against the cylinder solely by centrifugal force. These compartments vary from minimum to maximum on the suction side, and from maximum to minimum on the compression half of the revolution. Properly designed blades, and a wide seal between rotor and bottom of cylinder, assure high and maintained volumetric

efficiency; the multiple blades minimize pressure differences between compartments and contribute to maximum output with minimum wear.

OPERATION IS EFFICIENT

The Fuller Rotary Compressor assures a smooth flow, with no pulsations... numerous displacement deliveries per revolution as against one in a single-cylinder piston compressor. Other advantages are: Direct drive; Compact installation; Simple foundations; Maintained capacity and efficiency; and No valves to leak. Because there are few moving parts—rotor, blades, and bearings, **maintenance time and costs are negligible.**

For further information on Fuller Rotary Compressors that will do a better job for you, write for Bulletin C-5.

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Do you know how many jobs this vertical turbine pump can do?

We don't—but we'd like to! We've got an idea there are lots more than you might think.

Let's first take a look at the four inherent characteristics of vertical turbine pumps that make them the versatile units they are.

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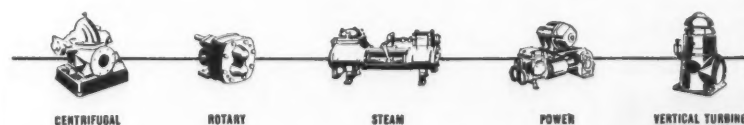
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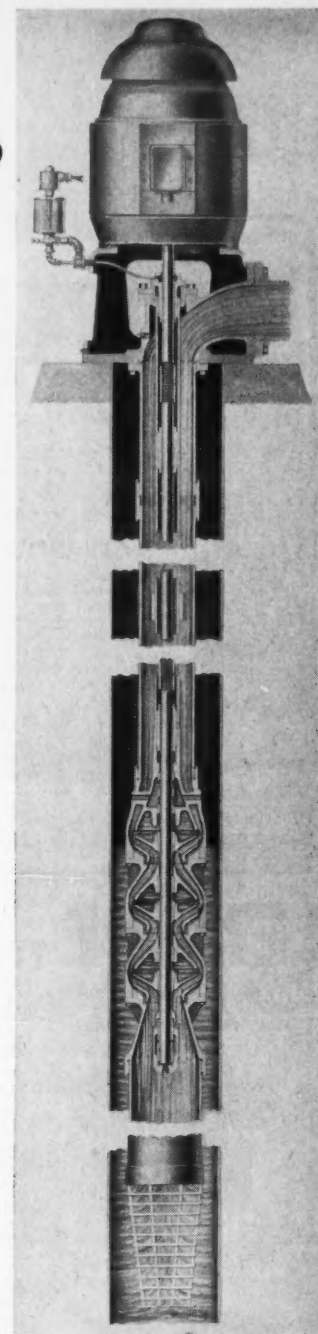
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| ✓ Indicates Feature Is Standard | | | | | | | | | | |
| Standard Features | Worthington | Pump A | Pump B | Pump C | Pump D | Pump E | Pump F | Pump G | Pump H | Pump I |
| Seals above and below drain parts (oil-lubricated model) | ✓ | | | | | | | | | |
| Wearing rings | ✓ | | | | ✓ | | | ✓ | | |
| Enclosed impellers | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Bronze bushings in bowl assembly | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Flanged and bolted bowls on all sizes | ✓ | | | | | ✓ | | | ✓ | ✓ |
| Sand collars at both ends of bowl assembly (water-lubricated model) | ✓ | ✓ | | | | | | | | |
| Grease-packed bottom bearing | ✓ | ✓ | | | ✓ | | | | | ✓ |
| Choice of oil or water lubrication | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

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D.1.10

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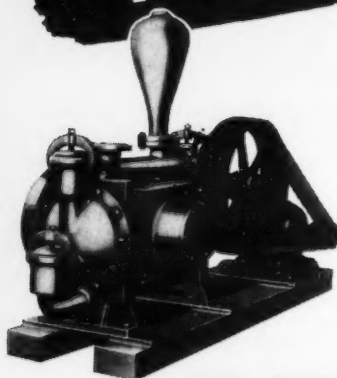
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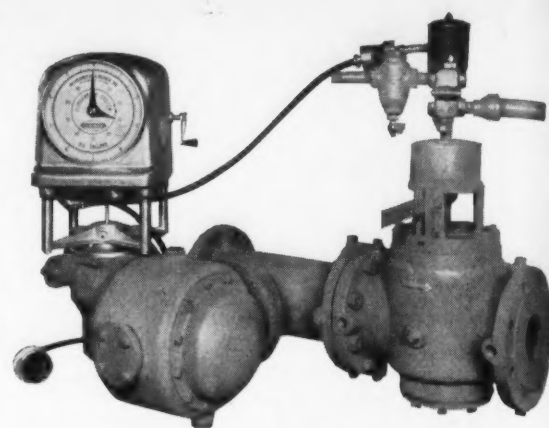
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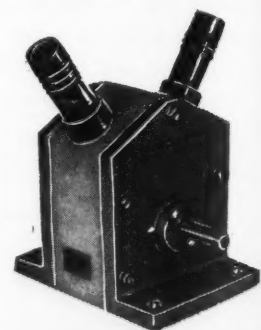
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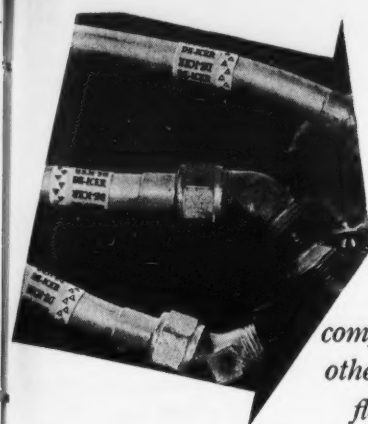
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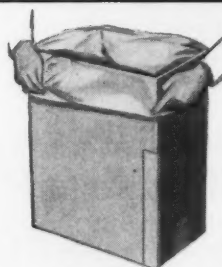
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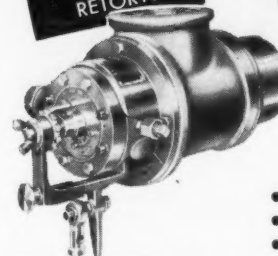
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Over 90% of all manufacturing plants with 75 or more employees have one or more vending machines. There are 75% more machines in use today than at height of World War II.

Atomic bomb survival kit

Boy Scouts of the Armco-sponsored troop of Middletown recently joined with other Boy Scouts in developing an atomic bomb survival kit. Second Class Scout Richard Lee Stiles assembled a kit that fits in a safety match box. It included a fish hook and line; copper wire, with which rabbits or other game might be snared; Halizone tablets with which to purify drinking water; razor blade for cutting wood or protection against snake bites; compass; "Bandaid" dressing; paper and pencil for notes and identification; waterproof matches. (As reported in *Arm-co-operator* — Armco Steel Corp., Middletown, Ohio)

Nuisance odors destroyed by catalytic combustion

Catalytic combustion is used to destroy stinks, even at the low concentrations ordinarily met in plant flues and ventilating systems, to prevent or minimize nuisance to the plant's neighbors. (*The Chemical Digest*, Foster D. Snell, Inc., 29 West 15th St., New York 11, N. Y.)

Quiet and cleanliness

Sound conditioning tile that is washable and has a tough flexible, linenlike appearance has been developed by Celotex Corp., Chicago 3, Ill. It has coating applied directly under pressure of hot knurling roll.

Bubble gun — yes, we said "gun"

A gun that shoots bubble bullets has recently been patented. It has a rubber bulb in the pistol grip and a magazine to hold bubble ammunition.

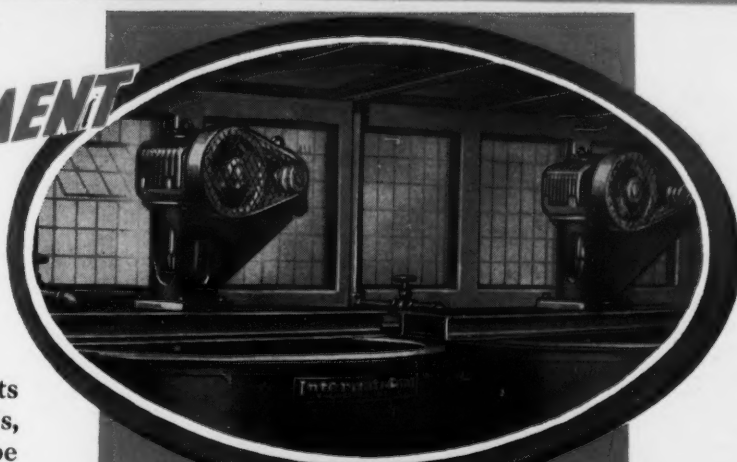
Aluminum landscape

Another modernistic approach — painting on aluminum — enables a mid-western artist to achieve an effective suggestion of icicles in his picture of a street scene in a Michigan town.

For more information on product at right, specify CP 9602 . . . see information request blank between pages 2-3.

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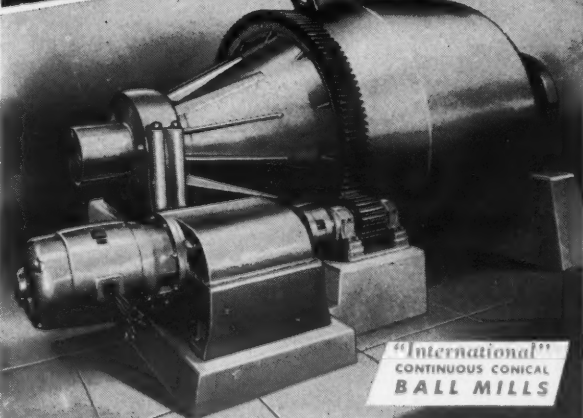
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